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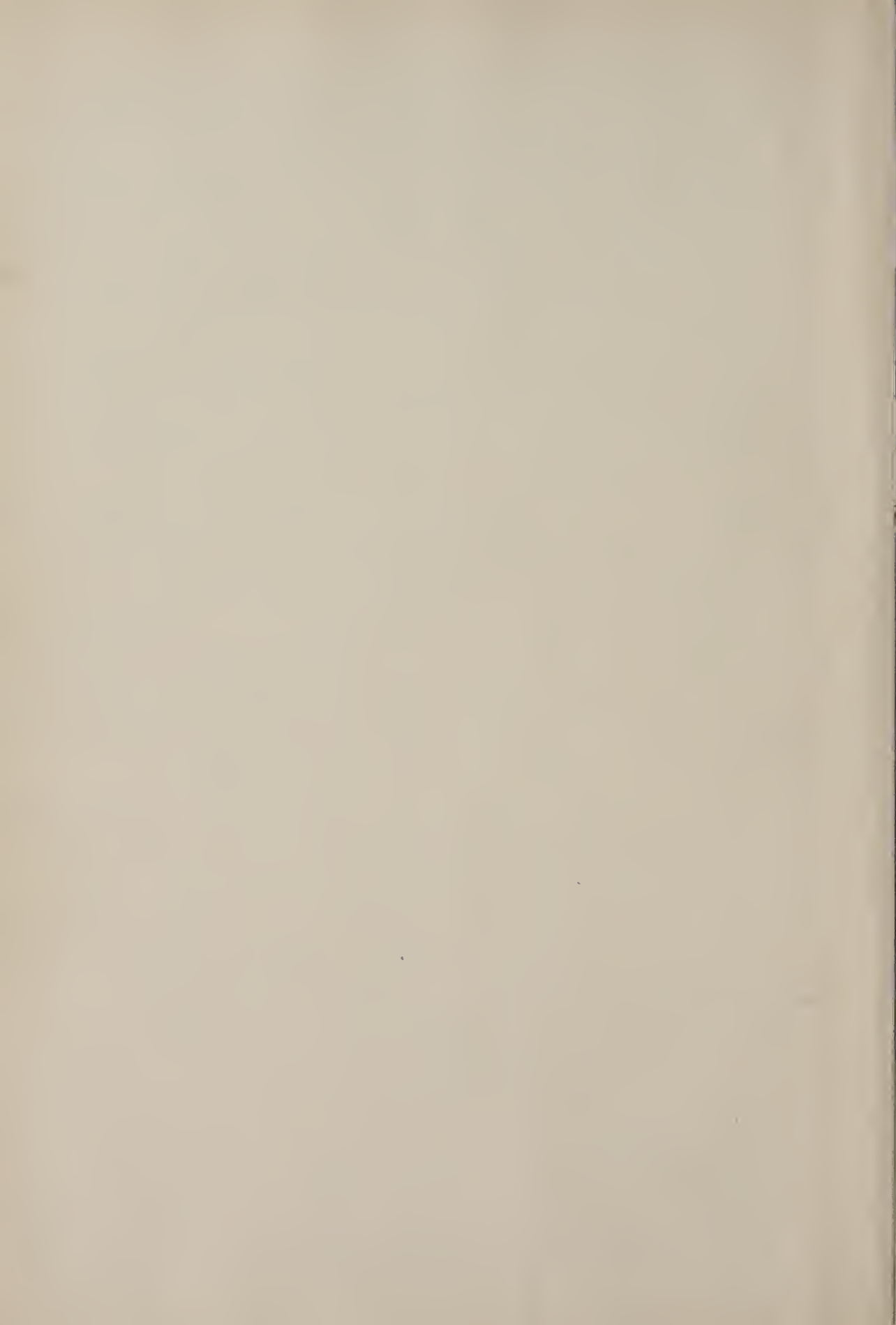
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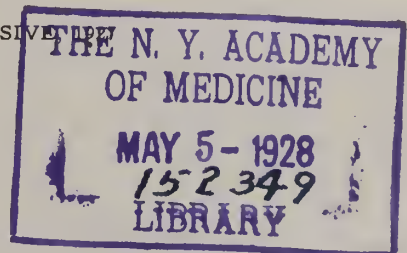
ARTHUR T. McCORMACK, M. D., A. B. P. H.

UNDER THE SUPERVISION OF THE COUNCIL

VOLUME XXV

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1927



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READY

Happy New Year

The New Stevens' Practice

For this new (2nd) edition Dr. Stevens has added all the approved advances in internal medicine and eliminated those procedures and methods of management discarded by the best practice. This necessitated resetting of the entire work from title to index. The important changes include rewriting of the articles dealing with syphilis of the circulatory system, botulism, heliotherapy, diabetes mellitus, alkalosis, spasm of the esophagus, chronic ulcerative colitis, multiple polyposis of the intestine, jaundice, bradycardia, paroxysmal tachycardia arterial hypotension, primary purpura hemorrhagica, erythema, hemorrhagic diseases of the newborn, trigeminal neuralgia and tumors of the cauda equina. Reference to the following subjects appear for the first time: Primary meningococcic bacteriemia, disseminated erythematous lupus, tularemia, epidemic jaundice in the United States, etiology of scarlet fever, Dick test for determining susceptibility to scarlet fever, coccidioid granuloma, lipodystrophy, agranulocytic angina, uveoparotid fever, vasomotor rhinitis, occlusion of the coronary arteries, melanuria, Epstein's nephrosis, sickle cell anemia, Aterza's disease, chronic sclerosing osteitis, aerodynia, and Horner's syndrome.

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VOL. XXV.

BOWLING GREEN, KY., JANUARY 1927

No. 1

EDITORIAL

A NEW YEAR'S GREETING

The JOURNAL, the organ of the practicing physicians of Kentucky, extends to its readers in and out of the State its best wishes for a prosperous New Year.

It seems to us that the medical profession never before had such opportunity; that it has never before assumed such tremendous responsibility. Kentucky physicians are charged with the health and lives of its people, not only by their common consent but by formal legislative enactment. We have bound ourselves together into an organization to care for the health and lives of our people. This does not merely mean those who have the intelligence and worldly goods to patronize us but it means that we are responsible for the health education and medical service of all our people. We must teach them what health is and how to maintain it. We must put it over to them that we can only keep them in good health if we can have their co-operation in periodic examinations before they become sick. It is our duty to teach them that we can only keep them from having smallpox when they are vaccinated. No other but physicians can teach parents that their children must be protected with toxin-antitoxin in order to prevent the ravages of diphtheria. In improperly and unsewered towns or in those having an unprotected water supply and in the country districts we must make universal use of anti-typhoid vaccination. It is the desire of the profession in Kentucky, because it is best, that all of these protective measures be administered by the family physicians wherever and whenever possible. We must make a more united effort during 1927 to put these things over in Kentucky.

The sick and death rate from tuberculosis is constantly decreasing; that from cancer and heart disease and the degenerative diseases of the kidneys are constantly increasing. We can only hope to materially make further progress in the eradication of all these wasting diseases by teaching our people the necessity for the annual periodic examination of the apparently well. The campaign for such an examination will only be successful when every doctor has such an exami-

nation made for himself and for the members of his family each year, and when he actually makes them in accordance with the general plan laid down by the Committee of the American Medical Association which has spent several years in the study of this procedure. Every physician in Kentucky has been supplied by this Association with the Manual prepared by this Committee. The JOURNAL proposes to make this its main objective for the year.

To succeed in all these things means, in this day of organization, that we must be more completely organized. Our county societies must hold regular meetings. This is only possible if each member feels his personal responsibility in the matter. If each one will help the secretary by sending in his dues as soon as he has read this JOURNAL, it will hearten the Secretary to do the work of getting up programs and meetings.

Let's all work together to make 1927 our best year.

MEDICAL EDUCATION IN MASSACHUSETTS

Our readers will recall that the House of Delegates instructed a special committee, of which Dr. W. A. Jenkins is chairman and the Secretary of the Association a member, to investigate the status of medical education in other states and to request the members of this Association to contribute their views through the JOURNAL so that a policy may be formulated at the next session in Louisville for transmission to the legislature which meets the following January. With this idea in view, we are publishing from the Boston Medical and Surgical Journal (October 21, 1926, p. 786), the remarks of Dr. C. F. Painter, introducing the resolutions of the Committee on Medical Education and Medical Diplomas before the Council of the Massachusetts Medical Society:

"I shall take only a few minutes to comment on the resolutions you are asked to consider. The Committee unanimously agreed upon these resolutions, basing their belief that the times were ripe for such an expression upon certain contacts we have had during the time we have been engaged in efforts to put Massachusetts' registrative laws in

conformity with those of a majority of the States of the Union. In regard to the attitude of the members of the General Court: It is perfectly evident that there is a feeling abroad that the public is not getting the service they desire from the medical profession and that they are quite content to take their chances on securing as good, or better, treatment at the hands of the cultists. They believe that the poor boy, i. e., the boy who feels the urge to study medicine but cannot make the grade through inability to meet present day educational requirements, often makes a better doctor than the man who has the time and money to spend to go through to a finish, and they can point to numerous proofs in support of their belief.

"Another contact which has prompted these resolutions is that which is appreciated and often spoken of by those who see the modern products of our medical schools in action before they have had a chance to unlearn some of the things they have been taught to emphasize. Conversation, only a day or so ago, with a clinical teacher in one of our schools is to the point. A woman in his ward had developed pneumonia during convalescence from a confinement. The diagnosis was plain to a casual inspection of her and her chart. The teacher asked the members of the section he was instructing for a diagnosis, intending to allow them opportunity to examine the patient. One man said 'pneumonia' and when the teacher said, 'Yes, what examination would you like to make to confirm your suspicions?' The student replied, 'An X-ray examination.' This the teacher said was not an isolated instance in his experience, but was fairly typical of the attitude of mind of many a modern-trained medical student. It is no answer to say that this might occur anywhere, among men trained at any period. It ought not to occur at all! Over-emphasis upon research we believe to be an outstanding fault of modern medical education. This introduces three serious defects into the system. In the first place it increases the cost of university medical school education out of all reason, when one considers what 80-90 per cent of the graduates of a medical school are going to do. I was told last week that the treasurer's office at Yale figures the cost of educating a student in Yale Medical School at \$3,600 per year. This means that high-priced laboratory teachers, on full time without much practical clinical experience, but devoted to research, are the ones who are to prepare undergraduate medical students for the emergencies and routine of general practice or, for what is far more likely, special practice in a city. This is not the

type of man qualified to teach, to the best advantage, those who are going into general practice, and right there is where over-emphasis of research is harmful. Research problems are special problems. Not one student in a hundred can be made into a research scholar and not 3 per cent of the problems that a general practitioner has to solve can be classed as problems calling for any special research ability. In one of our medical schools last year a fourth year student who had no idea what he wanted to research for, in the cancer problem, and had had no training along such lines, applied for and secured a research scholarship which required 10 hours per week of his fourth year time. Is it at all likely that he or the problem of cancer investigation would be profited by the efforts such a man could put forth in one year?

"Specialization has gotten out of hand in the present day medical curriculum. Specialization, without a general background, is certain to lead to many diagnostic errors. The schools should discourage it and restore to the departments of medicine and surgery a large part of the time which has been filched from them. The needs of the public do not call for so many specialists and the expense entailed for their employment has done as much as anything else to estrange the public from the profession and encourage their patronage of the cults. Over-crowding the curriculum has been a necessary consequence of listening to the clamor of the specialist for time, and then more time, for his particular hobby. The student's day is filled so full he has little chance to think about what has passed him in review and no time to read.

"Now this is no isolated outcropping of 'sore head' unrest. It is being talked everywhere and is merely a natural reaction from one of the unfortunate overactions which characterize American methods when attacking any problem. Under the leadership of a self-constituted regulative body a very praiseworthy job was accomplished, but in the process so much momentum was generated that the mark has been far over-shot.

"The purpose of the resolutions is to show the teaching powers in the schools that they are living a cloistered life and can not know, unless they are willing to be instructed, where their shortcomings are. We have only pointed out what seem to the Committee to be some of the defects in the product of the schools and ask them to make the corrections. The attitude of the opposition will be that the product is well nigh perfect. We believe there are plenty of the laity, whose loyalty to the medical profession has been wavering, who will be only too glad to renew

their faith in us and would applaud any effort to bring back the general practitioner to his own. For this reason we do not fear publicity. Undoubtedly the low grade schools might find a crumb of comfort in these resolutions, but no harm would come of that."

Doctor Painter's remarks indicate that many independent minds in our profession are arriving at similar conclusions in regard to the present trend of medical education.

We shall be glad to hear from our readers further in regard to this important matter.

A NOTABLE ACHIEVEMENT

Possibly the most outstanding medical achievement of the year is the completion and dedication of the new Waverly Hills Sanitarium by the City of Louisville and County of Jefferson.

This magnificent institution cost more than a million dollars and is the very last word in buildings of its character. It assures for Louisville and Jefferson County the most humane and scientific care possible for its citizens who have tuberculosis. This opening should be followed month by month and year by year by a more rapid decrease in the incidence of tuberculosis in its jurisdiction. Its activities will not be confined to the walls of the sanitarium but its clinics and a new diagnostic ward at the City Hospital and the educational work carried on by the Louisville Tuberculosis Association will make it reach every home in Louisville and Jefferson County. Its distinguished Superintendent, Dr. O. O. Miller, is one of the outstanding national figures in the fight against this disease. The medical profession of Jefferson County will follow his lead with interest and enthusiasm in helping to rid its people of the ravages of tuberculosis.

VINCENT'S ANGINA OR TRENCH MOUTH

Doctors Heymann, Hume and Thomas, the Committee on Dental Hygiene of the Jefferson County Dental Society, have called our attention to the widespread epidemic of Vincent's Angina or Trench Mouth, an acute infectious inflammation of the mucous membrane of the mouth and throat.

It is recognized by a grayish white membrane covering bleeding ulcers, located on the oral mucous membrane or gum tissue. It usually begins around or between the teeth. When this grayish-white membrane is removed by a tonsil swabbing, a raw, bleeding surface is exposed. A peculiar foul odor is characteristic of the disease and when one has become acquainted with this odor it is a powerful diagnostic aid. Quite frequently the

ulcers appear on the inner surface of the cheek, soft palate, throat, and it is especially likely to appear on the tonsils. There may or may not be a rise in temperature. There are frequently mild and sometimes quite severe chills and headaches with general malaise and excessive flow of saliva, sometimes stained with blood.

This is a highly infectious disease, easily transmitted by kissing, use of common towels, drinking cups, knives and forks; and, in schools, by the common use of lead or slate pencils and by the common eating of fruit or other ingredients of the lunch.

The Committee recommends in the treatment of Vincent's Angina the daily application, carefully and thoroughly, to the ulcerated surface of 5 per cent solution of Chromic Acid and that the following prescription be used by the patient:

Wine of Ipecac	Dr. VI
Fowler's Solution	Dr. X
Glycerine	Dr. X
Hydrogen Peroxide q. s. ad. Oz.	XVI

M. Sig: Use as a mouth wash every two hours.

Patients should, of course, be cautioned not to swallow any of this solution.

If the temperature rises to 101 degrees or over, or if glandular involvement is present, intravenous injections of neosalvarsan are indicated.

After the ulcers have healed and the inflammation has subsided, all irritants such as tartar, roots of teeth and dead teeth should be removed and the teeth thoroughly cleansed and polished.

Hundreds of cases of this disease have been reported in various sections of the State. Many of them have not been recognized because the physician failed to make a careful examination and, especially, failed to look for the characteristic odor and ulcers.

Our dental friends are entitled to our cooperation in helping get rid of this serious aftermath of the War.

IF A MAN IS SOUND IN BODY AND MIND WILL HE COMMIT CRIME?

The Commission to Study Crime in Kentucky desires to have expert opinion from the medical people of the State on the following questions:

1. To what extent do you consider the inherited mental condition of an offender responsible for the offences he commits?
2. To what extent do you believe the physical condition of an offender contributes

to his criminal tendencies?

3. What in your judgment could be done from the medical standpoint to reduce crime in the Commonwealth?

It will help the Commission materially in arriving at sound conclusions if readers of this will take the time to write frank discussions of the above points and mail them to the Chairman, John F. Smith, Berea, Kentucky. If you desire it your answers will be treated as confidential matter.

In doing this you will also be rendering a distinct service to the Commonwealth.

MEDICAL EDUCATION

The leading article in this issue of the JOURNAL is the Presidential Address delivered by Dr. William A. Jenkins before the Jefferson County Medical Society. The Address was delivered as result of a motion requesting Doctor Jenkins to deliver it. Doctor Jenkins is Professor of Clinical Medicine in the Medical Department of the University of Louisville and Chairman of the Committee on Medical Education of the Kentucky State Medical Association. His years of experience as a practicing physician and as a medical teacher qualify him as an expert in the field of medical education.

The House of Delegates at Frankfort instructed the Committee on Medical Education to make a careful study of the whole field with the view to recommending constructive legislation at the Louisville session next fall to be presented to the coming session of the General Assembly in 1928. Our members are invited to discuss this important question in the columns of the JOURNAL. It is quite apparent that something must be done. It is our responsibility to determine what that something is with the view to preservation of the best service of the medical profession to people of Kentucky.

Mechanical Pulmonary Embolism Inducing Lasting Increase of Erythrocytes.—Binet and Williamson produced pulmonary embolism in rabbits by injecting a Iycopodium suspension into the auricular vein. Examination of the blood revealed a considerable increase of erythrocytes, occurring in two phases. The first phase set in immediately and lasted from eight to twelve days. The second phase started at the end of two or three weeks, the number of erythrocytes increasing gradually to a maximum in the third or fourth month. This polysythemia persisted over six months. The number of erythrocytes was increased in the peripheral and in the central blood stream. They appeared normal.

ORIGINAL ARTICLES

THE MAKING OF A DOCTOR*

By WILLIAM A. JENKINS, M. D., Louisville, Kentucky

There is an old Latin adage which runs thus, "Poeta nascitur non fit," (A poet is born and not made), and so I think with equal truth, and to the same degree or extent, we may say, "Doctor Medicinæ nascitur non fit,"—a doctor of medicine is born and not made. Now the ancients were not registering adverse sentence on, nor discounting the value of education in any sense of the word. What they did mean was this,—that the chief underlying factors which go to make a poet must be found resident in and essentially a part of the very being of the individual who is naturally well endowed. On the other hand the greatest educational institution in the world cannot make a great man out of an individual who is poorly endowed.

The above principle is true of the individual who aspires to become a physician. In addition to the native qualifications of strength of mind and body, force of character, sobriety, honesty and common sense, the individual should have the desire and urge of the calling. His chief concern above all other considerations whatsoever should be a whole-hearted love of, and a desire for, the welfare of his fellow man in the broadest sense of the term. If a little more attention were paid to this end of the game we should not find so many doctors selling books and distributing proprietary medicines. Therefore I say that in the making of a doctor due attention should be paid to the question of *natural fitness or endowment*.

After that question is settled next in importance would come the matter of education. The determination of the proper method of educating a young man or woman to become an M. D. is of course a very weighty and important matter, and sometimes I think that we may have lost the viewpoint altogether, especially in this age of efficiency where everything is done by rote according to cross file indices, by ironclad inflexible abstract principles where the rules are not made to fit the case, (as they should be), but the cases are made to fit the rules, regardless of consequences. Thus we tend to become hopelessly entangled and engulfed in a maze of technicalities to the extent that, as I have said before, we are in danger of losing the

*Address delivered before the Jefferson County Medical Society by invitation, Louisville, Ky., October 18th, 1926

point of view altogether.

Education, from the standpoint of etymology, comes from "ex," sometimes written "e," used in the sense of a preposition with the ablative case and meaning "out" or "out of;" and "duco," a Latin verb of the third conjugation meaning "to lead" or "to develop." The word education therefore really means to lead out, to enhance, embellish or develop the qualities and traits which are found natively in an individual. In no sense of the word does education supply, or take the place of native qualifications. It simply develops or enhances the value of a something already possessed. The amount of time that should be spent on this period of preparation for one's life work, and the selection of the subject matter designed to occupy or fill this time, have always been debatable and much debated questions.

In the early youth of the writer, a half a century ago, to say that a man or a woman was an educated individual was equivalent to saying that the given individual was a college-bred man or woman, which in that day meant one thing only, viz: the pursuit of the so-called classical course, Latin, Greek, higher mathematics, logic, history and philosophy (the basic studies), with perhaps botany, zoology, chemistry and French. You were not educated unless you had gone this road. This was the one and only standard for all types and kinds of students. This course was supposed to be best for you no matter whether you intended to become a lawyer or a farmer; a doctor of medicine or a chicken fancier. After a time when our knowledge increased and application of a practical nature was made of our scientific knowledge to the uses and tasks of our everyday lives, the principle of utilitarianism thrust itself on the attention of educators. The clamor became loud and insistent for a more direct path to the goal. It was pointed out that the standard classical course was too heavy and consumed too much time and in many instances tended to lead the student too far afield from the particular line of work which he intended to pursue as a calling or occupation. In answer to this demand the literary colleges came out with two available courses. The classical course was supposed to be taken by individuals entering the so-called learned professions, e. g., educators, lawyers, doctors, ministers, etc., while the scientific course was designed to prepare students for the applied sciences, the utilitarian application of the sciences to the wants and needs of our everyday life. The growth in popularity of this policy was so phenomenally rapid that a little later on special technical schools sprung

up all over the country where a student could take up and pursue to the "n'th" degree special work, e. g., electrical engineering, mechanical engineering, special lines for applied chemistry, etc., etc. And it is now possible for a student to go directly from high school, or even from the graded schools, to one of these technical schools. Increasing numbers of our young men and women are taking advantage of this less cumbersome but more efficient method of equipping themselves for life's struggles. No objections have arisen to shortening or concentrating the preparatory education period leading up to scientific technical courses. It was considered that the end justified the means. The graduates were judged by their ability to produce, to perform, rather than by the number of years that they had spent in college, or by the array of standard Carnegie units which they had to their credit. In this field of endeavor, at least, we may safely say that the public at large has not suffered and utilitarianism has won the day.

Now let us take a birds-eye view of the progress and development of medical education in particular. From the dim memories of early childhood there comes to my mind this picture—a great white roadway winding like a ribbon around among the rolling hills of the bluegrass region of Kentucky. Along this roadway at a point where it was crossed by another road clustered in a beautiful valley was a peaceful little settlement. On one of the hills which crowned this valley, situated in its own plot of bluegrass, sat an old colonial home surrounded by magnificent old English elm trees with a double row of these same trees on either side of the main driveway leading out to the road. Well tilled fields surrounded the house, flocks and herds abounded. The picture was beautiful, peaceful and complete, from old Dobbin hitched to a post at one end of the lot to the gorgeous old peacock who always celebrated the end of the day by giving his raucous call from the top of one of the huge carved stone pillars which ornamented the end of the driveway leading out to the road. This was the home of old Dr. C., the community doctor, a man loved by everyone. He was a big man, bodily and mentally, cheerful, dignified, kindly and sympathetic. He was a leader, a counselor in all community activities,—a veritable "Willum McClure," a doctor of the old school, a hard and willing worker. The night was never too dark, cold or stormy if his people needed him. The greater part of his work was done on horseback with his saddle bags behind him, frequently over bottomless mud roads, and at times he was compelled to swim his horse over swollen turbulent streams in

both winter and summer. I encountered two young men occasionally at the doctor's house, one from a town ten miles distant and one from the country district near his home. They were "reading medicine" under the old Doctor's supervision, (that was the accepted method in those days). Quite frequently in the evening, or at odd times, the doctor would "talk over" the topic in hand with them, (a sort of quiz as we would call it now). Occasionally at rare and cherished intervals the old doctor would take one of the young men along with him to an obstetrical case, a case of a fractured limb which required setting, or a desperate case of typhoid fever. These occasions served a double purpose. They gave the doctor an earnest and willing assistant, and they gave the prospective medical student a chance to see, observe and be taught actual practice. This custom was the humble forerunner of the modern "Clinic." The young men were also taught something of pharmacy in a crude way. They became acquainted with the physical appearance of such drugs as were available in those days. They learned their physiological activities, toxic properties, combining powers, etc.

After one, or usually two years, of this part-time process of reading medicine under a "Preceptor," (they always called the old doctor their preceptor), they were ready to pack the old hair trunk and go to a large center of population and "Attend the lectures," or enter medical college, as we now call the process. Attending the lectures, however, was correct, as most of the work consisted of series of didactic lectures. Occasionally a clinical case was exhibited or a few amphitheatre clinics were held in a municipal or free hospital. After two or three years of this the candidate received his degree of M. D., (usually it was two years). Only the fewest number of these men were college graduates. The great majority of them had gone just as far as they could in the schools of their locality. Yet from the ranks of this class of men come some of the great contributors to the science of medicine. This, gentlemen, was medical education more than fifty years ago.

A standard educational requirement for admission to a medical school at this period was unknown, at least in the smaller schools throughout the United States. At the time the writer entered medical college the possession of a literary degree was looked upon as an accomplishment rather than a requirement. Higher educational qualifications were beginning to be encouraged but not required. And even our first-hand knowledge of bacteriology, physiology and chemistry

were taught by practicing physicians. These men, however, especially prepared themselves to teach their subjects, and taught them from the standpoint and relationship of their bearing on actual practical medicine rather than simply teaching these branches from the standpoint of their being abstract sciences, and we might say in passing that the plan was not without its good points. At this period a three year course was necessary to obtain a medical degree.

The next great step in advance was the introduction of the clinical method of teaching medicine. Outpatient departments were established in connection with the medical schools, where the poor of the great city in which the medical school was located were encouraged and taught to apply for relief of their ills. The patients were classified roughly into Surgical, Medical and Obstetrical cases, the great primary divisions of Medicine. This new course enabled the students to see, interrogate, examine and treat sick patients. In many instances a follow-up system was used and the student could see the patients in their homes under the supervision of one of the assistant teachers. A list was kept of probable obstetrical dates and said cases were assigned to the students under the guidance of an assistant teacher. Clinics were held in the great municipal or charity hospitals, and after a time the private hospitals furnished a certain amount of this type of work.

From this time on down to the present, or the modern era of medicine, as we may call this period, medical progress has been phenomenal. The utilization to the fullest extent of modern bacteriology and pathology, as correlated to etiology and physiological symptomatology; the introduction of a host of instruments of precision, the electro-cardiograph, the sphygmomanometer, the X-ray, etc., studies in metabolism, studies in the chemistry of the body fluids, e. g., blood, urine, etc.; functional tests as applied to the organs and glands of the body; intricate serological and immunological phenomena and many other brilliant studies have been perfected, all of which have served to place medicine on an advanced and scientific basis. All of these things have thrown a flood of light on practical medicine to the great benefit of mankind in general. Now the introduction of these new methods have brought in their wake new problems for medical men to consider. This is necessarily true. Many of the above-mentioned problems are still new to us and we have not been able as yet to evaluate them properly or to give them their exact and definite place in our armamentarium.

Let us consider some of them briefly. In the first place the dictum has gone forth that an individual should be scientific and highly educated before he is to be allowed to enter the great profession of medicine. This naturally brings up the question of entrance requirements. The preliminary or entrance requirements have been raised and raised, and re-raised, and the end is not yet. Now I realize that this is a dangerous subject. If you raise your voice, or even hint, that this matter can be overdone, at once the howl is raised that you are preaching low standards and poor doctors, and immediately your name becomes "anathema, maranatha." "Oh, we must have better doctors," you say. Certainly, yet many of us are not at all convinced that we can obtain this much desired result by simply raising the preliminary educational qualifications to an unusually high degree. Dr. Emerson and Dr. Williams, both teachers of ability, say in substance that the premedical requirements now in force tend to exclude from the medical schools men who would make good general practitioners and to attract men who are mechanically inclined. And we must remember that our pre-medical requirements are formulated by teachers of premedical sciences and that, as a rule, they have no interest in general practice. Much valuable time may be lost by the allotment of preclinical studies; feats of memory do not tend to develop judgment. A mind trained in pure science does not necessarily prepare its possessor for a favorable approach to patients. We have all seen many scientific and highly educated men who were very poor doctors. They may never become successful in the actual field of practical medicine. Many of our leading medical men of the day feel that the preliminary entrance requirements in medical schools could be shortened, concentrated, rendered less bulky, without in the least affecting the efficiency of the finished product, the medical graduate. Allow me to simply say this,—that I believe that we can go too far in the raising of preliminary requirements. We may exclude many deserving men who would be of untold value to our profession. We may go so far that youth, energy and substance may be recklessly and heedlessly spent ere the long and arduous race is well begun. In approaching this problem we should divest our minds of all preconceived machine-made notions. Vituperation, ridicule or sarcasm never settle issues. We must face this problem soberly as it now presents itself to us for solution.

During this modern era there has been a decided tendency on the part of Boards of Control to, in a great part at least, turn the medical schools over to the "Great Founda-

tions" in return for endowment funds, and said "Foundations" immediately place the school in the hands of professional educators, perhaps the majority of whom have never practiced medicine a day in their lives and many of them have never studied medicine at all and have no medical degree, and yet these men determine the kind, character and amount of the work that must be done to obtain a medical degree. Is this altogether the best plan? In the medical profession we have men who have risen to positions of honor and scientific eminence, men who have spent their lives in the actual practice of the various branches of medicine. Would it not be a good plan to invite such men to a seat in the council chamber? In the humble opinion of the writer every man who teaches in a medical school should be a graduate in medicine. I will go further:—he should have a keen interest in, and a love for practical or clinical medicine. He should come down and mingle and work with the clinical men. He should spend part of his time in the wards of the hospital with the clinical men in order that he might study symptoms and problems with them in an endeavor to turn his own scientific knowledge into channels that will assist in the solution of actual clinical problems. This plan would serve to cement and unify the whole teaching force. Their objective would be a common goal. Their understanding would be complete.

At the present time we are very far from this ideal. The above mentioned full-time men and the clinicians are too far apart and pulling in opposite directions. They are not correlating their work as they should, e. g., the teacher of chemistry, being perhaps a non-medical man, is intensely interested in the pure science of chemistry. In his view the most suitable candidate for medicine is of course the man who knows the most chemistry regardless, and so on throughout the list. Along this line a nationally known teacher of surgery, an authority, has this to say regarding the teaching of anatomy by the professor in one of the large schools of this country, "The first six weeks of the course in anatomy was spent in modelling the femur in clay." A little later along he says, "Twelve weeks were allotted to an intensive study of the embryology of the brain," etc. This same authority further states that "he feels positive that when these same students came up for their county examinations scarcely a one of them would be able to tell in what part of the body the median nerve was located."

The relationship of the laboratory and laboratory methods to clinical medicine. The birth of laboratory medicine has occurred

within the memory of many of us. We were taught diagnosis by the old methods, viz: careful and accurate history taking, (checked and re-checked); the elicitation of the physical signs and clinical symptoms, the careful correlation of the findings and the use of our judgment. Our resources being limited we were forced by necessity to perfect ourselves in their use to the highest possible degree, and to cultivate and utilize them to the fullest possible extent. (And this method is still the safest and best foundation for the medical man.) Now how different is our method in studying clinical cases. Our system of laboratory diagnosis is now very complex, complete and exceedingly helpful; and yet these new procedures have brought their difficulties with them. In the first place a great deal of time is necessary for the pursuit of laboratory methods, and that time is taken from clinical study hours. Laboratory methods have been fostered, accentuated and pushed by medical teachers in the last few years. The accuracy, the scientific trend, the relationship to research of the method, etc., have all been favorably placed before medical students. Consequently there is a tendency to look upon laboratory methods as "a short cut," "sure shots" and "exact methods." Many medical men have lost interest in physical examinations and are liable to discredit same. Medical men in general are manifesting a tendency to lean on laboratory procedures for diagnosis, e. g., "Why worry about the examination of the chest when the X-Ray reveals everything clearly, or about symptoms when a Widal tells the story? What are physical signs worth when a Wasserman shows it all?" Allow me to offer one or two homely illustrations of this tendency. Some time ago in an address before the Annual Congress on Medical Education Dr. Cushing related the following story:

"A patient was admitted in the fall to one of our well-known hospitals noted for its spirit of investigation and the exactitude of its work. The only thing that appeared to be wrong with the man was that he had a fever of unknown origin. A variety of people whose special duty it was had made detailed examinations of blood, sputum, stools and cerebro-spinal fluid; microscopic, chemical, bacteriologic. His thoracic and abdominal viscera had been thoroughly and expensively studied by the roentgenologist. His basal metabolism had been established and recorded; electro-cardiograms had been taken; and specialists were called in to exclude nose, throat, teeth, ears and eyes. All of these things took time and meanwhile the fever persisted. At this juncture, a country doctor

who had enjoyed none of the present-day laboratory advantages happened to visit the hospital, and as he passed this man's bed in the course of the morning's rounds, he casually remarked, 'I am surprised to see that you have an occasional case of typhoid fever in your neighborhood'."

Recently the author as requested by the superintendent of nurses of one of our large hospitals to see one of the pupil nurses. It was impossible for me to answer the call until the next day. When I arrived all the laboratory work was finished; in fact, the case was "worked up" and ready for presentation. Blood and urine examinations, basal metabolic rate, etc., had all been done, and a tentative diagnosis of incipient hyperthyroidism had been strongly suggested. A brief investigation revealed the following facts,—a very nervous and scared young woman. She was ambitious and over-anxious to meet all the requirements. The work in the hospital was rather heavy just at this time and there was a shortage of nurses. The patient was just taking her first try at night duty, and of course she was having difficulty in sleeping in the daytime. The greater the difficulty, the more nervous and apprehensive she became. Finally one morning she felt ill, had a nervous chill and the superintendent put her to bed. She was subjectively nervous, she had three-quarters of a degree of temperature, the pulse was rapid and of course some tremor of the hands was present. The visible blood vessels manifested a slight increase in the amplitude of their pulsations. A plain, encouraging talk, the assurance that she had no organic disease, a little rest with a couple of nights' sleep, a talk with both the patient and the superintendent of nurses as regards future conduct for the young lady, and in two days she was all right and on duty again.

Any clinician of experience could from memory readily recite numerous instances similar to the above which would serve to illustrate the point at issue. As a natural consequence of this over-stressing of laboratory methods we find that our medical students and younger practitioners are afraid to venture a diagnosis on a given case until all possible laboratory procedures are finished and reported. The laboratory men tell us that medical men and students should know more about laboratory methods. We might very justly retort by saying that laboratory men should know more about patients. The importance of the laboratory in the general scheme of medical education is being rather overestimated, while history taking and the proper utilization of the physical senses in obtaining evidence of disease are being neglect-

ed. The possession of technical, mechanical skill is not a substitute for the thinking process. The laboratory can never take the place of clinical study.

We find in the field of medicine today a type of man who has usually had relatively little real clinical experience, but he has an extensively and perhaps expensively equipped laboratory mill which is quite expensive and the patient, no matter whether his complaint be green apple colic or some serious and baffling systemic disease, must go through the entire laboratory mill, which is quite expensive, and in the end he is presented with a sheaf of multi-colored papers called "The Diagnostic Survey," and all too frequently this is about all the satisfaction the patient gets out of the transaction. This newcomer in our midst, gentlemen, is the "*diagnostician*." The truth of the matter is that we are allowing ourselves to become overwhelmed and overawed by the so-called "*exact methods*" and we are teaching our medical students to approach the problem from the wrong end. We are placing the cart before the horse. Why have all possible laboratory tests and the opinions of a variety of specialists first, when a well trained general practitioner could go over the case and find the trouble in about ninety per cent of all cases with considerable financial saving and great satisfaction to the patient? This is no argument against laboratory methods. We all should, and do, use them when clinical measures point the way. We should use them but not abuse them. We should know when to use them. We should know how to use them and, best of all, we should know when *not* to use them. If this present tendency in modern teaching methods is not corrected there is grave danger of our typical modern graduate in medicine becoming simply a *standardized, sterilized, denatured technician*.

We hear a great deal nowadays in a reminiscient way about the inimitable "*bedside manner*" of some of the old-time doctors. One of our most famous surgeons in a public address spoke lovingly and lingeringly of the "*Diagnostic acumen*" of some of the older clinicians and he stated that "We all wished that it could have been handed down." These gentlemen all seem to think that this faculty has been lost, but such is not the case. It has simply been pushed into the background, thrust aside by mechanical medicine, by "*exact methods*," if you please. Its failure to thrive is due wholly and entirely to lack of use. Human nature is essentially the same throughout the ages. Our young men and women of today are just as well qualified by nature as were those of the past generation,

and in addition they have the advantage of all the knowledge that has gone before. Therefore "*Diagnostic acumen*" and "*bedside Mannerisms*" are just as procurable today as they ever were. Anything whatever in human experience that is really and lastingly good need ever be lost, unless we lose it voluntarily. The acquiring of "*diagnostic acumen*" and "*bedside mannerisms*" are essentially matters of careful education and accumulated experience. The medical students of today can acquire these things in the same way and to the same degree that the older clinicians did, if they are properly taught. They must understand that they are human beings dealing with human beings. They must appreciate the personal equation at all times. They must develop the clinical sense. They must be taught to observe accurately, to interrogate skillfully and fully, to examine thoroughly, to correlate correctly and to judge with discrimination. Students and doctors properly trained along clinical lines tend to develop a peculiar type of tact and discretion, acquired only at the bedside, after long years of study and observation. A doctor of this type possesses a soul attuned to hear and interpret the cry of suffering humanity. This is called the art of medicine and it is quite beyond the mechanical doctor. Physicians are now speaking of it as a lost art. It is not lost, gentlemen. It is just a case of shameful and unpardonable neglect.

Specialism in medicine. Over-specialization is one of the outstanding faults of modern medicine. In our medical schools of today a large per cent of the senior class have already selected their specialties. The young graduate either starts practicing as a specialist or he takes a six-weeks' intensive course and then launches out as a specialist. We now have specialists for almost every organ and structure of the body. The country is flooded with wet diploma specialists. We are constantly splitting off specialties from the parent stem, "general medicine." There are several reasons for this state of affairs. A specialty generally means a greater income, more reputation, and the work is less arduous. Again, specialism is especially stressed in teaching medical students. In all of our medical schools we have a large number of specialists and each one of them is clamoring for more hours to be devoted to his specialty. Each one of them tends, (perhaps unconsciously), to isolate and magnify the work which he is doing; a certain glamour surrounds the work. The impression is created that only a few men can do this particular work. It is superior to ordinary medicine. He tends to make specialists in

his line of the students. Thus the specialties become separated from general medicine. They are taught in such a way that they tend to become independent, when in reality they should be inter-dependent. Every specialist who is a teacher in a medical school should have as his chief object the idea of making his specialty fit into and become an integral part of general medicine. In his teaching he should simplify rather than magnify. He should correlate rather than isolate. He should make his subject as simple as possible for the student. He should teach the student to do just as much of his type of work as it is possible for the general practitioner to do, safely. Of course he should also teach the student to recognize his own limitations in order that he might be able to make the diagnosis at the proper time, and refer the case to an individual possessing the requisite technical skill. (where such is required.)

As the matter stands today, if a man gets tired of general practice he "*Takes up*" surgery. He begins to do all of his own surgery, and forthwith he becomes a surgeon. A man who is too lazy or too incompetent to do general practice goes to London or Paris, stays a while and finally comes back with a new piece of machinery and "*elects*" himself a specialist. The public and, strange to say, even many of the doctors themselves have fallen under the sway of this false sophistry. In our large communities of today we find the laity going to the specialists. One member of the family has a skin eruption; he goes to the dermatologist. Another has a cold; he goes to the nose and throat man. And still another thinks that his heart is beating too rapidly, and he goes to the heart specialist, and so on, *ad infinitum, ad nauseum*. It is needless to add that all too frequently the patient fails to make satisfactory progress and it is discovered that the heart lesion is only a small part of the story. The T.B. case has diabetes also, and so on throughout the list. Not long ago a man came into my office with a number of Wasserman reports in his hand. They were conflicting. He had been all over the country. He was excited and nervous, in fact, almost crazy and very near a complete breakdown. He literally screamed at me with his fists clenched and said, "*Now have I got it or not?*" Now, wherever this man went, the first thing he got was a new Wasserman test, and that was about all he got. He told me that he slept very little, ate almost nothing and that he could not attend to any of his work on account of thinking of his trouble. This man did not need a specialist, he had already tried several of them, he needed a doctor. Not long ago, in one of the

current medical publications, I ran across this story: A clinician of note was putting in some time in the general medical clinic of a large hospital. One of the patients, a young man who in the routine preliminary examination, in addition to several other defects, had been found to have a well compensated valvular lesion of the heart. For some reason or other this young man was not progressing very rapidly, so a precocious young miss connected with the social service work approached the old clinician boldly and said, "Doctor, don't you think it would be best to refer this young man to the heart specialist?"

The method of becoming a specialist should be prescribed by the medical schools and the doctors themselves, and if this is not sufficient or possible, then it should be made a matter of legal enactment and the laws placed upon our statute books. Every man who graduates in medicine should be required to spend a period of at least five years, (and ten would be better), in general practice. The object of the average medical school should be to produce good general practitioners. The making of specialists is on the one hand a matter of especial fitness on the part of the doctor, as shown by actual practice, throughout a period of years, and second, a matter of special preparation in post-graduate schools and hospitals, the candidate taking a definite and prescribed standardized course. I am going to make a rather broad and sweeping statement, and I make it without the least fear of successful refutation. It is this. When it comes to medical matters the best guide that the individual or the family as a unit of our population can have today is the competent first-class general practitioner. Such a man will be able to recognize and successfully treat over ninety per cent of our ills and he will be able to do this with only a minimum of costly laboratory tests. When the services of a specialist becomes necessary he is still the best guide, because he is on the inside and he knows who is really a specialist, and he immediately sends or takes his patient to the proper man. And he again takes charge of the patient after the special procedure has been instituted.

Now by way of conclusion allow me to say that as regards the future of Medicine I am exceedingly optimistic. As I have emphasized in the paper, human nature remains about the same. The oncoming generations of men and women furnishes just as good, if not better, material than we have ever had before, and new and valuable methods and aids are being constantly discovered and added to our armamentarium.

Concerning pre-medical requirements, I am personally convinced that a re-arrangement

is necessary. I believe we can concentrate or condense this course so that it will contain all that is valuable and really essential, and at the same time that this amended plan will not in any way affect the efficiency and usefulness of the finished product, the young M. D.

I am very much against the plan of turning the medical schools over to non-medical, professional educators, with full-time men in all branches. A limited number of full-time men for certain branches is allowable, but I believe that men who teach in a medical school should be interested in and have some kind of a practical connection with clinical medicine.

I think the laboratory should be subordinate to the ward, that at present we are abusing laboratory methods. Clinical methods should occupy first place in the teaching schedule, and laboratory procedures should be utilized when and as clinical methods point the way. If we should adopt this plan there would be no necessity to lament the passing of "*bedside mannerisms*" and "*diagnostic acumen*."

The method of making specialists should be supervised and prescribed. The self-appointed, self-anointed type of specialist is a disgrace to the organized profession and a menace to the general public.

To the problems briefly but truthfully outlined in this paper medical men and medical educators should turn their earnest and immediate attention.

DISCUSSION

Arthur T. McCormack: I think no greater compliment has ever been paid to the distinguished organization which I now address than that presented by your president in the very learned and complete address which he has delivered, upon your invitation, and I realize the impossibility of extemporaneously discussing a paper so finished by adding anything to it.

I have never had the privilege of being a medical educator in the organized sense of the word. I think maybe I ought to say, like Saul said, that I was one of those who helped do the thing, but, like Paul, am sorry.

Looking for just a moment at the picture drawn by Dr. Jenkins: I recall the period from 1867 to 1904, when we had from five to nine medical schools in Louisville, no man failed in his examinations in either of the two years of the course who had paid his fees and a man rarely passed who did not pay his fees. That was the situation that confronted medical education not in Louisville alone but in the United States. Yet during that time we must understand there were three classes of men going through these schools of medicine: One totally unfit that never made doctors except

in name, useless and valueless from the time they entered until they finished, and, unfortunately, they were not "weeded out" under the system then in vogue. Second was that large element of the medical class of that time who were men with sometimes scanty education, scanty training, but with natural desire to secure a place in the community long held by the greatest men in each community of America,—the family physician. He was the center of culture, he was the leader of public opinion, he was not only the preserver of health but the wise counselor in the difficulties of his clientele at all times in the various country districts, small towns and cities of America. It was perfectly natural that ambitious young men of such communities should desire to emulate his service to secure for themselves and their posterity the benefit of such reputation, love and affection as secured by the family physician. The third class were those fortunate men who had the advantage of culture and education before starting in the study of medicine which enabled them to take especial advantage of the lessons that were taught and the demonstrations that were made and who become great leaders in our profession. And yet we must realize, and we do realize, that as we look backward over the list of great men who have developed into masters in the various departments of medicine; take a list of the presidents of the Kentucky State Medical Association; take a list of the presidents of the American Medical Association; take the men who have become masters in the various procedures in which we are especially interested today, ninety per cent of them could not enter medical college today under any circumstances. When we corrected the mistakes of the post-civil war period did we over-correct them when we excluded from our ranks that large bulk of the rank and file of the profession? In attempting to grade applicants now only by their cultural advantages are we not preventing them from developing individuality and the leadership that has distinguished many of our schools in the past? It is a serious question. When we state in our entrance requirements that a man must have studied so many semesters, so many subjects, so many hours; when we have finished all of that have we secured for the great majority of our medical students the power of thought, the power to reject fallacy when it is presented to them, the power to concentrate, and have we eliminated from them a great deal of the tremendous urge for service without which every medical man is like a woman without religion or a flower without odor, a thing to look upon but not to admire? Have we gone too far in saying that man shall have attained such and such a number of hours? I saw only the other day

a young man, the son of a doctor and a fine young fellow, not only the son but the grandson of a successful doctor, who was rejected although he had a college degree because he had only taken one modern language—he had not taken two. He has been notified that he must return to college and take another year in French. I am perfectly frank in saying that is the rankest sort of nonsense. I believe the time has come when we ought to regard that as nonsense and when we should abandon that sort of artificial standard. I have no fear of the hue and cry most frequently raised by those less trained against those who would modify the course in medicine on the ground that we are going to destroy education and “reduce the standard,” that we are going to remove the fence erected to protect education of physicians. Whenever the fence has been raised to such height that it prevents worthy and ambitious young men from entering medical college it ought to be removed, and if we have made the standard of entrance on the wrong basis let us have the courage to correct our wrong and make it right. We have developed as Dr. Jenkins has well said, but has development been entirely in the right direction. Time was when all of our teachers were clinical practitioners of medicine. My mind’s eye brings back, as I know yours will if you pause to think about it, the great teachers who have stood in these bull pens in the medical colleges of Louisville and have discussed the question before their students of anatomy, physiology and chemistry. There was no pure science in that sort of thing but there was a tremendous amount of medicine in it. Those men were successful practitioners before they became teachers and impressed on their students every single statement they made and every line they wrote. They emphasized the advantage of a complete history. That is the first thing a real doctor does. The second and biggest thing he does is to serve. Without these two essentials all the science in the world never will make him a successful practitioner of medicine.

The making of a specialist is a very broad question and one that deserves our profound consideration. There is not a man among us who does not recognize the abuses in this connection. In writing the last law on medical practice that was passed by the Kentucky legislature during his life my father provided authority to the State Board of Health to require special training and special work before the selected specialty was entered upon. Until the present time it has been impossible to make this section of the law effective, but steps have been taken and much hard work has been done in that direction and I can assure the profession of Kentucky that we

propose to resume leadership in that respect and the State Board of Health is now figuring and expects to frame and submit for the approval of the profession plans which will enable the profession itself to determine methods by which those who expect to announce themselves as specialists will be enabled to go before the proper examining board and show their fitness for such specialties. We realize, and I am sure you do, that ninety per cent of all the work that is done in medicine should be done by the general practitioner. We realize the enormous burden in the first place that is being put on the specialists. I am sure there is not a surgeon present who does not examine in his office every day from sixty to eighty per cent of patients who should never have been referred to him, as they are not surgical cases. I am sure that applies with equal force to every specialist. The enormous number of office patients who have to be examined overworks the specialist. People insist upon their physician sending them to specialists when there is no necessity for it. This is one of the biggest burdens the specialists have to bear. Look at the reports from the Mayo Clinic which show that eighty-five per cent of all patients that come there are non-operative cases, the patients being sent back to their family physicians for care, treatment and cure, and in order to take care of the people they have had to organize an extensive staff on general practice because of the paucity of actual and real general practitioners.

We are confronted with a very much more serious aspect of these conditions: I had in my office today a splendid physician from Hartford, Kentucky, who three and a half years ago had a serious attack of illness following which his heart would not permit him to perform the arduous work that he had previously done. He wrote here asking for a physician to come to Hartford and take charge of his office, that he would be glad to have a young man and would provide him with the necessary office equipment, give him access to his card records and every other facility which will cost him nothing, and he assures him an income of \$3,500.00 the first year and that he will continue to increase that income if he is worthy of it from year to year. He receives a reply that it was practically impossible to secure men to locate in small towns like Hartford because of the bad roads, poor educational advantages and the difficult surroundings, the lack of hospital facilities, the fact that they would not have access to laboratories, and other things of that sort. Now, gentlemen, we have to answer the plea of the people for service. We are sending medical missionaries over the broad seas to carry the lesson of the Master, but can we do that consistently from a state where the number

of physicians in actual, successful practice in that state are decreasing almost daily, where the age of physicians in actual practice of medicine in the country is increasing and young men are refusing to locate in the country to take their places?

I had in my office today a county health officer who told me about a district at the border of Edmonson and Grayson counties where within a radius of eighteen miles in each direction there is no physician, where there were formerly six. I recall these six men and knew each of them personally. They were men of the type and character that makes us proud to have known them, they were leaders in their respective communities, successful men who had enough of this world's goods to live in comfort, but of far more importance than this world's goods they had the confidence, love and respect of the people in that locality and a record of successful service, and as they passed on to their reward no one appeared to take their places in medical practice. This sort of thing is happening all over the state and elsewhere, too for that matter. Young men simply will not locate in the country and no amount of persuasion will induce them to do so. This health officer from the district I have mentioned, where they now have an epidemic of smallpox and many cases of diphtheria, told me that it cost \$15.00 which must be paid in advance for an automobile to carry a physician from the nearest point to visit the sick and in addition \$18.00 for each visit that is made. We talk very glibly about a protective tariff to prevent certain things from being brought into this country. A tariff of the sort described makes death far cheaper and euthanasia far easier to attain than any care our profession seems willing to give.

Are we going to develop in the medical profession of the future not only great laboratory men—and we need all we have and a great many more, not only great surgeons—and we need as many of them as we have and more, not only all the other specialists but we are not going to develop in some sort of way great general practitioners who will take the places of those who have departed, who will render service to the people and who will re-establish our first line of defense? Looking at the matter from a purely selfish standpoint: if all the young men who graduate in medicine are going to become specialists, even if they are well qualified, how are they going to get any patients because there will be no one to point the way to their offices. They will be on the same basis as the chiropractors, osteopaths, and various other cults. Is that to be the ultimate end of specialism in medicine? Is that the thing we are after? The whole problem is a very complex one. But we are going to solve that problem if we will, as

Dr. Jenkins has outlined, wisely and seriously consider its various aspects and phases. Unless we do this disastrous results may follow. All of you may not know but it is a fact that our legislators realize today as never before in Kentucky that we have the confidence and respect of our people and they are looking to the medical profession for assistance in the solution of this problem. They know we have always been willing to help, they know we have reduced morbidity and mortality rates, they know that the death rate in Kentucky now is about one-third of what it was fifty years ago, they know that preventive medicine is making great strides and it is making these strides because we are continually preaching and teaching its methods.

The last three sessions of the general legislature have only failed to consider drastic changes in the medical practice laws because they have not known exactly the methods to pursue, because they were waiting for suggestions from us looking toward salvation of the medical profession. Unless we are prepared at the next session of the legislature to give the necessary aid, we are not going to be able to stem the tide much longer. At the last session the state board was required to examine and admit high school students to the study of medicine. I wish there were reputable medical schools that admitted high school students. I believe that would be the means of graduating a very different type of doctor than under the present system. Provision was also made that after two years of medical study a man passed his sophomore examination well and was not able to continue his studies at that time, he might, under the supervision of the county health officer or medical referee of the county, go into practice in some section of the country where there was imperative need for a practitioner of medicine. He is to be at all times under the supervision of the county health officer or medical referee as preceptor so he will acquire ability as a practitioner in a section where he is badly needed.

It is going to be only a short time, and we are formally notified of that fact, until the present organization if let alone is going to require a college degree for admission to all medical schools and this is now practically required of nearly all graduates coming out of many colleges. The fifth year internship is already required by more than one-third of our states and is thus obligatory upon more than one-third of our graduates. The fifth year in medicine itself is already being discussed by the council on medical education. Are we going to remain dormant and allow this sort of thing to continue? It is a question for us to decide. Sometimes we think, it is a question for the

Council on Medical Education to decide and sometimes we think it is a matter for someone else to decide. Under the present system medical education is under control for the most part of all-time professors who never practiced medicine a day in their lives. That in large measure accounts for the lack of clinical understanding on part of present-day graduates in medicine. I think this is a matter for the medical profession to correct. We must resume control of our own, what belongs to us, we have stood still and permitted it to be taken away from us. We have permitted teachers in our medical schools to instill into our students too much so-called pure science instead of making them practitioners of medicine.

As members of a profession we all love, honor and serve, we must resume the position which rightly belongs to us. We must clean house ourselves and accept the responsibilities that are ours as servants of the people and the servants of science. We must not permit the unlearned in our arts and sciences to usurp our rights and enact laws which will destroy the edifice we have raised and which has been ours for these many years.

There is one fallacy that has been repeated so frequently the profession is beginning to believe it, viz., that the number of physicians being graduated is approximating the number formerly graduated and approximating the need of the profession. If we will stop and analyze facts for a moment we will see that is untrue. While we are graduating an increased number of men, the professor of pathology requires two or three internes to do certain parts of his work, and the professor of each and every other fundamental branch of medical teaching requires the same number. Naturally these men are going to become specialists. *ab initio*, along the line in which they are working, for the reason that no further special training is going to be required. It will take three others to replace these men in the general profession. Even if five times as many graduates were being turned out the demand would not be satisfied because of those retained by the specialties. So far as the patient is concerned, it takes a larger number of men to give him service than ever before in the history of the profession. We are not coming anywhere near supplying the number of physicians needed in the practice of medicine. This applies to practically every part of the United States.

J. W. Kincaid, Catlettsburg: It is not necessary for me to give any praise to the wonderful paper to which we have listened. I believe the greatest compliment I could give it would be to say that I wish I had been the first one to present the subject in such a splendid manner.

The subject of medical education really re-

minds me of what Mark Twain once said about the weather, i. e., "everybody talks about it, but no one seems to be doing anything to change it." I know the subject has been discussed for the last six years at the meetings of the Kentucky State Medical Association. Four years ago I recall we had a rather acute condition develop in regard to it when the state association met in Paducah. It was on the eve of another session of the legislature when people in the country were clamoring for relief on account of the scarcity of doctors.

For a long while we have been trying to find some means of relieving the situation, and the idea has occurred to me that the course was entirely too long. The average young man finishing the eighth grade in school is fourteen years of age. He has the next years, then, to devote to study before he is permitted to practice medicine. Of course the young man finishing the grades at fourteen has not the same mental development and power of analysis and observation that young man of sixteen or eighteen years would have when finishing the eighth grade. His entrance to school was perhaps delayed until the age of seven or possibly nine years; if living in the country he has only been able to attend school five to seven months of the year and sometimes not so long as that; at times for reason of sickness or other cause he has to miss a year entirely. Thus it may be seen that if he finishes the graded school at the age of eighteen, and then has to devote thirteen years to high school, college and medical college including one year as interne, he does not enter the practice of medicine until he is about thirty-one years of age, and the best part of his life has already been spent, because, according to a distinguished authority, you know he is no good after forty, he is on the decline.

In previous discussions of this subject I proposed that we shorten the course, that we make any young man who was a graduate of high school eligible to matriculate at medical college after two years' course at the state university or other college of equal credit, such two years to be devoted to what we are pleased to call a pre-medical course, then three years in medical college in addition to his two years pre-medical course. I believe such a plan is entirely practical. In my opinion there is too much time wasted in the medical schools in repetition, and also a great deal more wasted in simply doing nothing. I think there are many practical questions that students soon have to face when they "hang out their shingle" that are not even taught in medical schools.

In submitting questions on the branches assigned me for the State Board of Health examinations, I have always tried to select subjects

that should be familiar to the young doctor and at the same time representing conditions that he would likely encounter most frequently. I have never framed a "catch question" nor anything of that sort. At the last examination covering theory and practice of medicine there were four questions that were thought particularly necessary and that the young doctor should have definite and full information upon:

1. Give the differential diagnosis between cerebrospinal meningitis and typhoid fever.
2. Give the symptoms and treatment of epidemic influenza.
3. In what pathological condition is digitalis indicated, and in what contraindicated; describe dose and action.
4. Explain the principles covering the treatment of convulsions when due to toxic agents in the blood stream; name two conditions and give treatment.

These were, to my mind, subjects worthy of the knowledge and attention of the young doctor, and certainly during the first few months of his practice he would most likely have to contend with one or more of them.

All the papers submitted were tabulated as to these four questions. Of the fifty papers examined, with respect to Question No. 1, the average grade attained was 71 per cent, a little over the average passing grade. Question No. 2 showed 72.6 per cent. Question No. 3 showed 72.5 per cent. Question No. 4 showed 65 per cent. In other words, just a bare passing average for the fifty papers examined. The applicants seemed to hunt for every kind of convulsions that an individual might have, from rabies, tetanus, strychnine poisoning, etc., losing sight of the conditions that originate with the system that might produce convulsions, the type of convulsions, too, which they would be most frequently called upon to treat.

I do not know where the fault lies, but it does seem to me that it is an indictment of the kind of teaching students receive when such papers are presented to us for grading.

Harry A. Davidson: The most excellent paper presented by Dr. Jenkins should have full discussion. I wish to state that, in the main, I agree with almost everything in the paper, but I would rather take an optimistic view of medical education than a pessimistic one. Dr. Jenkins' view is somewhat pessimistic, and the same may be said of Dr. McCormick's discussion.

In the first place the gentlemen who have spoken gave their credentials for discussing the paper; we know why they were here and why they discussed the paper. It would probably be proper to state a few of my credentials. I was an educator before I studied medicine, and after graduation I taught in a medical school for fourteen years. About two years

ago, because of my interest in educational matters, I accepted a ten-year-job as trustee of the University of Louisville, so I am very much interested in education, and especially medical education.

It will be remembered that in 1907 the standard of medical education was beginning to be raised. Medical education was at a very low ebb about that time. The medical profession of the United States of America was looked down upon by European members of the profession. The leaders of the medical profession realized the fact about that time, medical educators realized that fact, and said the standard must be raised; and in 1907 they commenced raising the standard. Every year they raised it a little. That continued and the number of students decreased year after year until two or three years ago when it reached the minimum. Now the number of medical students is increasing. Many of you may know that we decline here in the University of Louisville a number of applicants to study medicine every year. When I was a student and when I taught in the old Hospital College of Medicine we "grapped" every student we could. Now, as you know, we decline a large number of applicants to study medicine. I believe this is true in every Class A. medical school, and the University of Louisville is a Class A. institution. We get all the students we want and graduate a larger number of doctors. Thus it may be seen that raising the standard does not prevent young men from entering the medical profession today. That question is answered.

Now, was it necessary to raise the standard? As stated in the beginning, in 1907 the medical profession had reached such a low level that it was considered a very ignorant profession in the United States of America. Today the medical profession of the United States of America might be considered the aristocracy of education,—and it is truly so. Dr. Jenkins stated in his paper that men who enter the technical profession, the engineering and other professions have to go through graded schools, through high schools, then enter their technical school, four years being required for graduation as electrical and mechanical engineers, etc. A young man aspiring to be a doctor of medicine must have two years of college before entering the professional school.

I disagree with Dr. Kincaid in one particular: Young men now enter high school at the age of twelve to fourteen instead of fourteen to fifteen as was true twenty years ago. Therefore they finish at least one or two years earlier. They have eight years in graded school, four years in high school, then two years pre-medical instruction in the university, four years for their medical education, and one year intern-

ship. On this basis the average age of the young man graduating in medicine should be twenty-four years. But for the sake of argument place it at twenty-five or twenty-six years, that still leaves a margin of five years. Dr. Kincaid stated the age of graduation as thirty-one years. I believe twenty-five or twenty-six years should be the average age for a medical graduate on the present basis.

I am speaking purely from the standpoint of the medical profession, and I hope Dr. Jenkins will send a copy of his paper to every member of the board of trustees of the University of Louisville with a special request that they read it. You will remember I prefaced my remarks by agreeing with almost everything Dr. Jenkins stated in his paper, but I would rather be optimistic than pessimistic on the question of medical education.

I have only recently returned from a trip to Europe. I went on a three months' jaunt with some other doctors and their wives for a vacation. Since I am interested in medicine and surgery I visited a great many hospitals, some of the best in Berlin, Paris and London, and I must admit that here in America we have everything as good or better than they have in those countries today. We do better surgery here in the United States of America now than they do in any of the hospitals I visited in London and Berlin, and this is confirmed by others who have been abroad. I would like to say, along that line, that in one hospital we saw a young man who was a splendid operator and seemed to be doing things like they do in America. It was later ascertained that he had been a professor of surgery in one of our universities and had returned to Europe, so he really received his surgical training here.

The medical profession today needs education more than ever before. Are we giving them too much education? If you want to require a college degree of A. B., which means four years in college, before a young man can enter medical school, then I will say you are going too far. I believe Dr. Jenkins' paper is apropos at this time to encourage discussion which will prevent medical schools from requiring that much. As a delegate to the American Medical Association I receive literature from the office along this line, papers on educational subjects like the one by Dr. Jenkins, and I have read some of them. The subject is discussed both pro and con. Some of the papers are like the one read by Dr. Jenkins, some of them are on the other side, and there is another side to the question. Twenty-five or thirty years ago we were in the dark ages of medicine, we have proceeded through the middle ages, and are probably now in the renaissance.

I claim that the medical graduate of today is the aristocrat of education. He has a better

education than any other man is required to have. He has to enter medical practice in competition with the osteopath, the chiropractor, the christian scientist and the devotees of various other cults who try to discredit our profession. The doctor must be well educated to cope with such opposition. The medical profession should be better educated than the people they are to treat, they should be looked up to. Dr. Jenkins cited the case years ago of the old country doctor who was looked up to, and the same thing can be said today in many communities throughout the country. These old time doctors were loved and respected in their communities and the conditions should be the same today. They should be looked up to because they are better educated than the people around them. The people should respect their ability and should recognize they are better able to treat the ill and afflicted than anyone not so highly educated.

One of the few points Dr. Jenkins said we are not laying enough stress upon today is bedside teaching: If we are not, then it must be the fault of the bedside teacher because in the curriculum of the medical school the first two years are given to preliminary subjects like physiology, anatomy, chemistry, pathology, etc., and the last two years to clinical instruction and bedside teaching. When the old time doctor studied medicine forty years ago he had six months of preliminary lectures on anatomy and physiology and then the next six months in clinical work. In the medical schools of today do not the students have better training? Do they not have the first two years devoted to anatomy, physiology, pathology, etc.? Do they not have the third and fourth years for practical training in surgery and medicine? Do we not have bedside teaching here in the hospital? We did not have that opportunity as students twenty-five or thirty years ago. Students of today have much greater opportunity for the study of clinical medicine, or bedside medicine, than they had years ago. They are getting two years of this training, whereas thirty years ago they had only one year or in reality six months. Now they get sixteen months, and in addition most graduates take a year internship in the hospital which is a very practical course of training, so the graduate of today is much better trained than the graduate of thirty or forty years ago and should make a much better doctor.

As to the scarcity of doctors in the country: Graduates insist that they will not locate in the country, because they have invested eight or ten thousand dollars in their medical education and they want to locate some place where they can get a quick return on their capital invested.

There is another side to the question: Should not the people in the country, where scarcity of

doctors exists, construct better roads, build hospitals and furnish facilities to enable the doctors to take proper care of his patients? The fact that such facilities are not furnished brings people requiring medical attention to the cities and larger towns where the necessary attention can be given them.

As to the question of too much medical education: Would Dr. Jenkins wish to lower the standard of medical education in the University of Louisville medical school as it is today? If he merely advocates, not lowering of the standard of medical education, but rearrangement of the subjects and the methods of teaching, then I agree with him entirely.

All entrants to medical college must have two years pre-medical study, that is the standard requirement today. If Dr. Jenkins' paper creates enough disturbance to prevent the requirement of a four years' college course for entrance to medical school, then I think it will have fully served its purpose.

G. A. Hendon: In considering this question the first attention should be given to the elements out of which a doctor may be constructed. I would consider character, ambition, lofty ideals, and sincerity of purpose, as the essential ingredients in the making of a doctor, and no man or set of men has any right to deny the possessor of these qualifications entrance to our medical schools. It is a treason against humanity to concoct any scheme or set of rules or regulations that will throttle the laudable ambition or stifle the humble scholastic advantages enjoyed by his more fortunate contemporaries, which fortune they possess by accident of birth or trick of fate but not on account of any merit of their own. It must be remembered that it is from remote and obscure gardens of domestic purity that our nation has always drawn and always will draw the great majority of useful citizens.

Standards of medical education should be made to meet the needs of the people they are expected to serve whatever those needs may be and not to fulfill the expectations and gratify the conceit of professional scholars who have spent their lives beneath the sheltering eaves of academies and never have known or felt the crushing weight of deferred hope which the philosopher says "Maketh the heart sick."

Doctor Davidson seems to find cause for exultation in the idea that our present system is producing an aristocracy in medicine, what sick people need is not aristocrats but physicians. Whoever heard of an aristocrat doing anything? All the aristocrats I ever knew spent their time endeavoring to get things done for themselves. Nothing so paralyzes honest effort and wrecks otherwise noble lives as much as a consciousness of inherited superiority.

Reference is also made to the "looking down" upon American medicine in the past by Europe. Would not the Europeans have to fly mighty high to find an altitude from which they could look down on Ephraim McDowell and Crawford Long, two humble country doctors. Nearly all the great practical contributions to medicine have been made by Americans. The only notable exception is Pasteur and he did not have an M. D. degree.

There is also to be considered a relationship between standards and requirements that may easily escape observation. Lowering requirements does not necessarily lower standards. By rigid demands controlling entrance, men of the very highest ideals and the noblest purposes may be excluded because through misfortune they were unable to follow the required scholastic routine. On the other hand there is a large proportion of the more fortunate applicants, who have done the prescribed number of hours or years as the case may be and yet have neither the character nor the ambition nor any other qualifications necessary to be a doctor. Many a boy goes to medical school to establish a drawing account at home and to gratify parental vanity. Therefore by lessening scholastic requirements we may elevate the standards of physicians. By getting into the profession men who possess those able qualities of the mind that are always essential to honorable, useful, and distinguished service, we place the profession in the most important position it could occupy, namely, the position of being available and responding to any affliction. Accessibility in time of stress is an indispensable attribute to any public utility and elevates the standard of any service.

The argument which upholds the postulate that if the people in obscure communities would build roads and schools the better doctors would locate among them is an idler's dream, and is promulgated by well meaning persons who have no conception of the privation of the poor in rural districts; those people are compelled to toil with such incessant diligence they cannot spare the time to travel on the miserable roads they already have if they would meet the dire necessities of their existence with honor and without disgrace. A tax sufficient to construct the highways contemplated would confiscate their farms and deprive them of a living. It is with the greatest difficulty they can spare their children from the fields long enough to attend the schools now accessible even during their abbreviated session. I am reminded, in this connection, of the famous resort of one of the Queens of France when one of her ministers informed her that the peasants did not have bread to eat, she replied, "Let them eat cake then."

Carl Weidner, Sr.: Dr. Jenkins has pre-

sented us with an excellent and timely paper. I agree with him and am glad that the general practitioner is again coming into the foreground.

Medical education should be arranged in such a way that we can produce real general practitioners,—a good family doctor. Coming in close contact with many more people than the specialist, he also has a chance in the teaching of modern hygiene and preventive medicine.

I believe medical education ought to train the practitioner sufficiently so that he will be able to diagnose and treat successfully the larger number of ailments of mankind. No man can master the entire field, however, and there is plenty of room for able specialists.

One of the most important duties of the general practitioner is to know and decide when the specialist is needed.

There can be no question that great advance has been made in medical education. When I graduated in 1881 we had mainly theoretical, didactic teaching and very limited individual bedside instruction, neither had we any microscopical training, no histology or pathological anatomy, no postmortem work. I graduated without attending personally to a single case of obstetrics. Many of you, as I, had to get training in these deficiencies by postgraduate work away from home.

Let us be honest, then, in stating that great advance in teaching has been made, and advance must continue. I think we are now on a sufficiently liberal foundation. A good high school education, two years of college work in addition, then four years in medical study, and a practical year in a good hospital, ought to be sufficient for a good foundation for a doctor. As in any profession, the greatest practical medical education must begin after leaving medical school. Osler's advice to visit different universities and do some post-graduate work every five years seems well founded.

Criticism seems possibly justified that too much time at present is given to laboratory work. Clinical personal teaching at the bedside ought to be given most important attention.

The question of double standard of medical education to supply more doctors in the country is quite unreasonable. Sick people are entitled to the very best skill which medical education can produce, whether they are poor or well-to-do, whether they live in the city or in the country.

Harry J. Phillips: I graduated in medicine in 1893. In those days we went into the amphytheater, which was well lighted, warm and pleasant, and were entertained by the professor forty-five minutes; then the bell rang and we passed across the hall into another amphytheater and were entertained there forty-five minutes by the professor of some other branch. We had

medical teachers of ability, we knew them personally as friends and as companions. These men have all passed to their reward. They were men whom we loved and revered, and whose names we cherish.

After graduation we started in the practice of medicine then our education really began. During my student days I never saw a woman delivered. Shortly after beginning practice I was called to a case of confinement, and, fortunately for me, the baby was born when I reached the bedside. I recalled that the professor of obstetrics had told us to express the placenta by the Crede method, but fortunate again for me the placenta was lying in the vagina. That was my first case of obstetrics.

I think those who say that doctor should have five years or more in general practice before he specializes is making a mistake. I do not see why a young man should confine his activities to general medicine for five years if he intends to specialize. I believe he should enter his specialty immediately upon leaving the hospital and devote all his attention and learning to that one line of endeavor instead of practicing general medicine for the period mentioned.

The question has been asked why do we wish to specialize in medicine? There is but one answer, i. e., because we wish to commercialize, because there is more money in the specialties, and because the lay press and the medical press inform patients that they ought to apply to the specialist for advice and treatment when there is anything the matter with them. Those men who are writing articles for the newspapers are educating the public every day to go to certain specialists for certain lines of treatment.

The main reason why country districts have no doctors or very few, as mentioned by Dr. Kincaid, is because we are becoming more indolent as the years go by, we like to have things easy and comfortable, we like to practice medicine where we can have all the comforts of life, we are becoming too aristocratic in medicine, we locate in thickly populated sections where calls are frequent and not so far apart, in other words we want to live on feather beds and have things pleasant, consequently it is difficult to find young men or middle-aged men who are willing to go to the rural districts to practice medicine.

About the old family doctor: He is a thing of the past practically. After those who are now living have passed away it will be difficult to find any of the old time family practitioners as they will have ceased to exist. Men of today are trained in harmony with modern times. It is the trend of the times that makes the specialist and makes the doctor of today. Consequently, as times have changed so has medical practice changed and so have men changed, and you will

not be able to find the old practitioner as you found him thirty or fifty years ago.

We need specialists just as we need general practitioners of medicine. I do not want to take the middle road, do not want to be on the fence so to speak, but I wish to disagree with Dr. Jenkins when he endeavors to maintain that our requirements are too severe; at the same time I believe those who take the other side are also right. We did not have so many restrictions, requirements and regulations when I was a medical student. As already stated I graduated in 1893 and there were one hundred and seventy-three men in my class. Now, you know that after ten years these men knew whether they want to be doctors or not. Many of them found the work too arduous and abandoned practice, others found they could earn money more quickly in some other line of work and quit practicing medicine. The figures show that after ten years four out of every ten of these men abandoned the practice of medicine and entered some other line of endeavor. This materially reduces the number of doctors. These men entered the study of medicine because they believed they could learn enough in two years to become doctors, but they learned very little and found they were unfitted intellectually, socially, temperamentally or professionally to practice, so they quit after ten years' trial.

It is my conviction that we should continue our present standard of requirements for the study of medicine, we should make these young men the best that can be found, they should have an adequate preliminary education and academic training, because the doctor goes into the family and to the bedside, and he should possess a certain amount of scholarship, he should be sincere and conscientious, he should have social standing to enable him to meet his patient as a friend as well as a doctor. If men are not educated, if they are rough and uncouth, if they have failed to obtain the proper foundation for a medical education, they will never make doctors such as we expect them to be and as the world expects them to be.

D. P. Hall: I graduated in medicine with the younger generation of doctors with the incipiency of the so-called full time teacher. My father was a successful general practitioner in the country and a graduate of the old Kentucky School of Medicine dominated by men of sound judgment, keen intellect and clinical sense, not of the microscopic type but of the macroscopic type,—such men as Wathen, Dugan, Kelly, Weidner, Marvin, Doherty, ad infinitum.

Dr. Phillips and some of the other gentlemen who have spoken concerning obstetrical teaching in medical schools years ago had about the same experience as graduates of more recent dates. I never had the opportunity of delivering

a woman during the time I was a medical student. We were taught all about Caesarean section, Potter version, etc., but very little about the conduct of normal labor. We listened to many lectures on basal metabolic rates, renal function tests, non-protein nitrogen estimations and other laboratory procedures, but were taught practically nothing about the clinical aspects of medicine. I recall one of the students asking one of the all-time professors in medicine the proper dose of calomel. He said this would have to be figured on the basis of milligrams per kilo of body weight before he could give an answer.

I don't think the period of four years in medicine should be shortened, but I do think it should be concentrated and some of the non-protein nitrogen and fanciful ideas eliminated. It would also seem advisable to eliminate many of the unnecessary and nonsensical features. As an example: one professor talked about non-protein nitrogen two hours a day for six weeks and when he had finished none of us knew any more about the subject than could have been taught by a sound clinician in ten minutes.

The fact that medical students are required to spend a longer time in college now than heretofore does not mean that they acquire more knowledge. The time is coming when something will have to be done, otherwise there will be no doctors who really know medicine.

I quite agree about the statement that no man should be a teacher in medical school unless he has had at least five years' experience in general practice. The idea is absurd that a man may graduate in medicine today and become a teacher tomorrow or next week. The point I wish to make is that much of the teaching today in medical schools, being purely on a laboratory or research basis, is fallacious.

Dr. Jenkins' paper is timely. It is the best paper I have heard read before this society during the last two years. I am only sorry that the dean of the University of Louisville is not present to discuss the paper at length.

Skin Induration in the New-born from Obstetric Traumatism.—Hallez calls attention to an induration of the skin, appearing five to ten days after birth on parts which have been exposed to obstetric traumatism. The induration, in the form of small nodules or large patches, covering in some cases the whole deltoid region or the entire back, is painless. There is redness, which disappears under pressure. The lesion develops in a few hours and clears up without treatment at the end of several weeks or months. The infant's general condition is unaffected. This traumatic induration or pseudoscleroderma is easily distinguishable from true scleroderma or erysipelas.

THE PRESCRIBER AND THE PATIENT*

By WM. B. DOHERTY, M. D., Louisville, Ky.

While the great advances in medical and surgical practice have been justly proclaimed, and their advantages in preserving and prolonging life recognized to our credit, I trust I shall not be tainted with pessimism or psychological derangement if I should criticise ourselves sanely, as I believe in pointing out some of the mistakes we often make, in the present treatment of our patients.

The detail man whom we receive almost daily at our offices and who is as voluble as Cassio, pleads earnestly that his wares often engraved with easily remembered and attractive names, be tried by the credulous physician for our suffering patients. From Dan to Beersheba from Land's End to John O'Groats, from the sands of California to the rocks of Japan, gaudy literature, extolling the virtues of new remedies and samples too numerous to mention, may daily fill our waste baskets. The loquacious detail man fresh from Clotho's spindle of the salesman's school, the catchy name of his firm's product, and its advertised recommended success, form a psychological triad, which may appeal strongly to the weak or indolent physician who prefers to order an easily written medicinal agent, than a thoughtful prescription of well tried efficacious drugs, endorsed by our highest authorities; the Pharmacopoeia and National Formulary.—Forsooth he prescribes by a trade mark. The tendency which prevails among many physicians to write for new untried remedies with their efficacy unknown except by the advertising lure, as well as that for well known reliable drugs without the proper written precaution. *Non Repetatur* (Do not repeat) may, by their continued and unrestrained use by our patients and their friends, be responsible for drug addiction, neuroses, and other conditions, exhibiting lessened resisting power when confronted by disease.

The Pharmacopoeia (10th Decennial Revision) 1926 and the National Formulary contain all Drugs and Biological products that are official. It would be better for humanity if all the others (Non official) were relegated to oblivion, except a few which may have been recently endorsed by the Council on Pharmacy and Chemistry of the American Medical Association.

Pharmacy has become a huge parasite eating the vitals of the body medical. The drug store has in many instances deteriorated from

a professional laboratory formerly supervised by educated scrupulous pharmacists, (then our honoured messmates), to an emporium of sundries, which includes not only cigars, ice cream, toilet articles, lip sticks and other cosmetics, whose name is legion, but headache powders, (the druggard's seductive bait), heart depressors, and remedies, recommended for every symptom, without any knowledge of the condition existing, handed over the counter. I am confident we have more druggards, neurotics, and weakened heart affections in consequence. It has been said with some unctious of truth that one can tell who the last firm's detail man was, that came to town, by looking over the latest prescription files of the drug stores. Technical, careful prescriptions of pharmacopial remedies by the physician, and the science of pharmacopies have unfortunately become devious, if not lost arts, dominated and tainted by the commercial spirit which characterizes this age of chapman's wares, rather than the noble, soul stirring work of high professional duty. We have familiarized our patients with the names of the remedies we prescribe, and in consequence have frequently lost the psychological effect, a very valuable and desirable factor in the treatment and relief of disease, which the technical, and to the patient, the secret, unreadable prescription, produces.

When one writes a prescription for calomel, quinine, aspirin or bromide of sodium that the patient may read, the result of the patient's confidence in his physician, and his hope of relief are not enhanced to the same degree as if one had used technical terms—Hydrarg. Submurias, Chinin Sulphatis, Acid Acetyl Salicylat or Natrium Brom. This is practical psychology, whether it is shown in the mob psychology of the emotional, in an outburst of enthusiasm, in the admiration of the hero or heroine, or in the quiet aid-seeking invalid, who presents himself to a physician for relief. There is a ray saving—Shall we ever have an appetite but for dishes under cover? That may explain the attitude of the patient to the prescriber. We recognize the fact that the physician with the superiority complex, having the four T's—fact, temperament, trustworthiness, and training, has a decided advantage over the less fortunate, not possessed of such attractive and excellent qualities. However the study and practice of psychology will always be a winning card in every line of human endeavor, including the practice of medicine, which has not been ethically and properly used by the average physician who may be obscurely wise and coarsely kind, but advantageously used, by the shrewd garrulous

*Read before the Kentucky State Medical Association, at Frankfort, September, 1926.

uneducated quack for the fool multitude who choose by show. We have been engrossed so much with the study and results of mechanistic science in the treatment of disease in all its various ramifications, X-ray and electric appliances, including microscopical and laboratory findings in terms of mathematics, that we may possibly have lost sight of the fact that the human being is not an automaton, but a living moving mass of vitalizing cells whose ultimate nature is beyond our comprehension, though influenced by the personality of the humanist.

The physician of today, despite the brilliant advances made in all branches of medicine, is unable to explain how an intolerable and troublesome case of hysterical aphonia, paralysis, or blindness may be relieved by suggestion, a sharp look of the eye, or a slap of the hand,—

"There are more things in Heaven and Earth, Horatio, than are dreamt of in your philosophy."

We are still—

"An infant crying in the night,
An infant crying for the light,
And with no language but a cry."

We often spend considerable time and devotion to duty in the interpretation of the nurse's chart in the ante-room, which might be more profitably utilized by remaining a longer period at the bedside of the patient, using all our powers of observation, methods of examination, and sensible deduction, aided by an accumulation of experience in individual traits, and dominated by good sense. Pope truthfully says "Good sense which only is the gift of heaven, and though no science, fairly worth the seven." Probably we have become imbued with the fascinating aids and glittering artificialities in treatment, that we may not have accentuated the importance of nature's forces, the great factors, the physiological agents, air, light, water, rest, exercise and diet, in the interest of our patient.

In view of the fact that seventy per cent of persons over 40 years of age are over-fed, over-weight, handicapped by a fatty burden, a liability, which becomes a serious impediment to their efficiencies, and lessens their vital resistance; and excessive smoking, now so prevalent, being a great factor, particularly in the young, in the production of irritable hearts, physical weakness, and mental inanity, as well as other ailments, the duty of the physician as counsellor, guide, and disciplinarian, in these and other conditions dangerous to health has never been more apparent, nor of greater need.

Shoemaker, (Materia medica and Thera-

peutis) states that according to records of the Smor Class in 1916 for a period of eight years, those who used no tobacco were 20 per cent taller, 25 per cent heavier, and had 66 per cent more lung capacity than the smokers.

"Bad habits gather by unseen degrees,

As brooks run to rivers, rivers swell to seas."

The almost constant use of the automobile has enforced lack of proper exercise, and minimized the greatest activity for health, that of walking.

Intemperate and irregular eating, not so much in obedience to the cravings of appetite, but for amusement, for fashion's sake, for fellowship, making caprice one's cook and the stomach one's slave, deserves the severe condemnation of the medical disciplinarian. The amount and multifariousness of palling and indigestible matter passed into the stomach, saturated with blustering condiments mingled with lemonade and ices of almost every description, is frightful. The entire magazine of bad rapid cookery, and worse confectionery is opened to tempt one, and the temptation succeeds, with the result that the abdominal cavity may be transformed into a cauldron of decomposing indigestible substances, consequently one may become a physician's once chair-warmer, suffering with "gas pains" and fashionable "neuritis" thereby paving the way for the unenviable distinction of becoming a brave "operatee." There can be no greater work on the part of the physician than that of disciplining those who come under his care, in regard to their habits, and subjecting them to regular examinations. How many sudden deaths, chronic and often incurable diseases might thus be averted by obedience to proper instructions. And so much medical knowledge is acquired by the laity that is not so, by rampant advertising, and self treatment by samples ("remedies") the physician of today with the high resolve to do his duty faithfully, and conscientiously, must not act the part of a pleasing dilettante, a compromising wheedler, nor a toyish instrumentalist.

The continued or intermittent use of aspirin, (a word in almost everybody's mouth) and the other salicylates, in gradually increasing doses by habit formation for the relief of pain, promote waste and more or less destroy the development, or prevent the formation of red corpuscles, are heart depressors, and like Veronal, Luminal and other sleep producing agents interfere with metabolic processes. Less drugging, spectacular display and orientation, more positive and better disciplinary measures, and proper use of air, light, water and food, rest and exercise,

in the treatment of disease, should be the rallying cry of the modern physician.

"Above all price of wealth

The body's jewel! Not for minds, or hands profane,

To tamper with in practice vain;

Like to a woman's virtue, is man's health,
A heavenly gift within a holy shrine

To be approached and touched with serious fear

By hands made pure and hearts of faith severe,

E'en as the priesthood of the One Divine."

SOME OBSERVATIONS ON PERITONITIS*

By J. GARLAND SHERRILL, Louisville

Causes—The actual cause of this affection is the presence of pathogenic bacteria within the free peritoneal cavity.

The actual condition which permit the entrance of bacteria within this sac are numerous and varied. External and internal traumatism, including stab and gunshot wounds with or without rupture of the intestine or other viscera permit bacterial invasion. Crushing force producing rupture of the intestine without external communication produce one of the most violent forms of peritonitis.

There are in addition many non-traumatic lesions within the abdomen which lead to the development of this affection. Among these may be mentioned ulcer of the stomach and duodenum, abscess of the liver, cholecystitis, pancreatitis, intestinal obstruction, diverticulitis, strangulated hernia, intussusception, appendicitis, perforation of the intestine in typhoid fever, inflammation of the uterus from puerperal infection, suppurative disease of the tubes following labor or abortion, that due to the Neisserian infection, tuberculosis of the intestine, pneumococcal infection in young girls, rupture of the bladder, ruptured ectopic gestation, etc.

This large number of causative conditions of necessity makes a wide variety of symptoms preceding the development of peritonitis. This fact should be borne in mind by the practitioner whenever a grave intraabdominal condition presents. The chief importance should be attached to the early recognition of the occurrence of an abdominal calamity so that surgical intervention may be sought before the development of peritonitis or just at its inception. The reason for this is apparent and lies in the fact that early recog-

nition and prompt treatment of any of the conditions causative of peritonitis results in the prevention of its development or checks it before it can become widespread.

You are all familiar with the usual symptoms of all the varied conditions previously mentioned and the presence of any of them, with shock, pain, tenderness and abdominal rigidity, should demand advice from a surgeon.

Time does not permit us to enter into an extended discussion of the differentiation between the different conditions resulting in the production of peritonitis. The suddenness of onset, the location of pain, the shock, the rigidity and tenderness, will enable and physician to recognize a surgical lesion.

The abdominal symptoms vary greatly in different cases, but there is always an increase in severity as the hours roll by, until finally the signs of impending dissolution are evident to all.

There are a few points which I wish to clarify for you and upon which there has been some debate. This is particularly true of the management of appendicitis.

Some surgeons claim that there is no medical management of a case of appendicitis, and that such a case is always surgical. The latter contention is true, nevertheless I submit the proposition to you, would you not prefer skilled medical treatment to unskilled surgical intervention?

For reasons that are apparent, as the absence of a skilled surgeon, the refusal upon the part of the patient to consent to surgical measures, a minimum number of cases demand medical care. Even cases coming to the hospital for operation must be so conducted that the surgical work may be carried out safely. This safe conduct depends upon the skillful and sympathetic handling of the patient by the physician.

In the case of appendicitis, for example, the attendant should recognize that the case is surgical, that rest in recumbency is imperative, that under no circumstance is a purgative to be administered, and that food and water should be withheld while vomiting is present. Gastric lavage will do more to control vomiting and allay pain in appendicitis and other perforative lesions, gallstone disease, and ileus, than will opium. After its use the patient comes to operation in the best possible condition. The application of cold to the abdomen is to be preferred to heat when it can be had. Otherwise very hot applications at equable temperature are employed. An opiate may be employed after

*Read before the Third District Councilor Meeting at Bowling Green.

the diagnosis is made, and in order to transport the patient safely to the hospital for operation.

The mortality from peritonitis has been markedly reduced in the past twenty years. The factors active in this reduction are:

- (1) Prompt intervention.
- (2) Avoidance of purgatives.
- (3) The use of gastric lavage prior to and after operation.
- (4) The abandonment of peritoneal flushing.
- (5) By the use of proctoclysis.

It might be well to discuss these points separately.

(1) Prompt intervention has come to be recognized as imperative in all abdominal calamities. Every suspected case of peritonitis demands immediate operation and the only contraindication is that the patient is moribund. The old statement so often heard that it is too late for an early operation and too early for a late operation no longer holds. The operation may be safely carried out at all stages except when death has already set in.

(2) The observation has been made that purgatives in appendicitis are harmful because of the increased peristalsis excited by their action. Ochsner first called attention to this fact. Studies of mortality records have demonstrated his contention to be correct and cases which have been purged show a higher mortality and a stormier convalescence.

(3) Gastric lavage removes an enormous amount of toxic material from the alimentary canal. This prevents its absorption, lessens the toxemia and quiets the nausea.

(4) The abandonment of peritoneal flushing which in the early days was considered essential by the writer and most other surgeons, resulted from the work of Murphy, who showed much better results when it was not employed. It was learned that efforts to wash out the peritoneal sac were ineffectual and that dilution of the inflammatory products resulted in greater absorption and depression.

The present plan which we employ is to open a perforative appendicitis case, remove the appendix, suture the colon at the point of removal, while an automatic suction pump (of E. H. Pool) takes the fluid out of the belly, and to close with a rubber or cigarette drain. When there are no ragged spaces of damaged tissue and only slight discoloration of the peritoneal fluid, drainage may be abandoned.

(5) To my mind the instillation of fluid

in the rectum after or even before operation is one of the most important life saving measures. This treatment we also received from Murphy. These patients are all depressed and dehydrated and there are certain bacterial products to be taken up by the absorbent vessels of the abdomen. Proctoclysis meets all these indications. It overcomes the dehydration and depression. The use of small quantities of adrenalin solution aids in the latter effect. Alkaline salt may be added to overcome any tendency to acidosis. Again proctoclysis lessens the rapid absorption of toxins from the intestine by filling the vessels with fluid so the peritoneal poisons enter the blood more slowly and in less toxic quantity.

Some surgeons use subcutaneous injections and intravascular infusions, but we consider both less valuable to meet the indications than proctoclysis.

In order to better appreciate the rational of the management it is well to know something of the cause of death from the disease.

In cases of low tissue resistance with a virulent bacterial flora the local resistance is limited and the constitutional reaction very marked. Such cases go to a fatal termination before the local reaction indicates the development of peritonitis. These are the so-called septic types following a perforative intestinal lesion or a ruptured appendicular abscess.

Similar cases are rarely seen following contamination of a clean abdominal section. The peritoneal resistance has not been built up and suppuration has not had time to occur. Such deaths take place from the "primary overwhelming dose of the poison." The depression (Heineck) results from the direct action of bacterial products causing a paralysis of the vasomotor center in the medulla.

A factor of considerable importance and usually overlooked is the toxemia resulting from the growth of bacterial flora within the intestine. It has seemed to us that the absorption of poison from this source in addition to the intraperitoneal poison often turn the balance unfavorably. Based on this belief is founded the use of frequent gastric lavage.

Other observers place great stress on the importance of dehydration and the development of acidosis. In treatment measures are employed to combat these conditions.

Operative management demands proper selection of anesthetic, prompt, rapid, skillful surgery and careful post-operative attention. The more acute the type of peritonitis the more is skill, judgment and celerity needed.

Prolonged operations are fatal, since the shock of anesthesia, operative manipulation and heat loss are excessive. Very severe cases may be given drainage under an opiate with local anesthetic. Some apparently moribund cases recover.

The care after operation is also important and many a patient is lost after operation in cases of this class because of meddlesome interference on the part of the attending surgeon. Put these patients to bed in the Fowler position with one pint of normal saline or soda bicarb drip. Wash out the stomach if vomiting is present or if there is any distention. Give water freely by mouth from the start. Morphia is necessary in some cases for pain and restlessness. If you use it make the dose sufficient to produce sleep, at least 1-4 grain of the sulphate for an adult. Let the bowels alone. Even if four days go by without a stool it should cause no alarm. At this time, or on the third day if the patient is in good condition, an enema may be given followed by a dose of castor oil. The drain, if employed, comes out the third or fourth day.

In the absence of nausea and distention, orange juice or other liquid may be used on the second morning with soft diet a day later.

My advice to you is to rely on these simple measures with the occasional use of a tube in the rectum for gas and to avoid early purgation and the use of pituitrin to obtain a stool.

Glycosuria and Glycuronuria; Prognostic Value.—Roger investigated the conditions affecting the elimination of carbohydrates, particularly glycuronic acid. Experiments on dogs showed that physiologic influences, such as prolonged fasting or special diets, modified but little the carbohydrate content of the urine. In single clinical cases of obstruction of the common bile duct, febrile jaundice, secondary cirrhosis of the liver from spirochetosis, and alcoholic hypertrophic cirrhosis, and in eight cases of atrophic cirrhosis there was a close correlation between the amount of glycuronic acid in the urine and the gravity of the lesion. As long as the function of the liver and the reduction of glycogen were satisfactory, the urinary elimination of glycuronic acid remained almost normal. On the other hand, the glycuronic acid in the urine was much decreased when the hepatic lesion became aggravated; on recovery it became normal again. The chemical procedure used for detection and measurement of the glycuronic acid is given.

BOOK REVIEWS

SURGERY OF THE COLON. By Fred W. Rankin, A. M., M. D., F. A. C. S. New York and London, D. Appleton & Company, 1926. 366 pages, with illustrations.

This monograph of 360 pages and 152 illustrations deals with the large bowel exclusive of the pelvic colon. This seems to be a wise arrangement, for to have included the rectum and its lesions would have added so much that it would have been beyond the scope of a monograph.

The author has used freely of the literature and all to good purpose. He has given in this way not so much of a personal view as an aggregate of composite opinion. In the entire treatise there is not a suggestion of an arbitrary view.

Special note should be made in the review of the eighteen chapters of those on intussusception, diverticulitis, colitis, tuberculosis and cancer. The importance of these captions is so great that it is with real pleasure that one finds them handled in so broad and masterly a manner.

The right colon has been given a place of importance which it deserves. It is second only to the sigmoid as a cancer problem. Its treatment is very different from the sigmoid. It is regarded and treated by the author as a separate entity. The ideal is not neglected. Aseptic methods of bowel resection are reviewed, but not overstressed. We all know that they are logically sound but so often practically difficult.

The bibliography which is given after each chapter adds to the value of the work to no small degree. A generous distribution of sound statistics helps to dispel the idea that we are near the goal in surgical technic. There are sufficient brief sketches of case histories to keep the personal touch. The monograph is broad enough to be of value to all physicians, but especially to those doing general surgery.

R. F. BARBER.

NEWS ITEMS.

Dr. J. Murray Kinsman has moved to Suite 402-404, Brown Building, Louisville, Kentucky. He will limit his practice to internal medicine.

Dr. Gordon S. Buttorff announces the opening of an office at Suite 907-908 Brown Building, Louisville, Kentucky, for the practice of medicine and pediatrics.

THE WOMAN'S AUXILIARY

WHITLEY COUNTY ORGANIZES

At the call of the President, Dr. G. T. Corum, the Corbin Medical Club and the Whitley County Medical Society and wives of its members, met for dinner at the Smith Hotel, Wednesday, December 8, 1926.

During the delightful repast, Dr. Corum called for several impromptu speeches. Dr. Wm. M. Martin, Harlan, Councilor, Eleventh District, responded with a most enthusiastic endorsement of the Woman's Auxiliary, urging that each County Medical Society encourage the organization of its own Auxiliary. The President then call upon Mrs. A. T. McCormack, Louisville, Secretary-Treasurer, Woman's Auxiliary, Kentucky Medical Association, for a brief explanation of what the Auxiliary is and what it does.

Following this speech, the women adjourned to the Assembly Room at the Carnegie Public Library for the purpose of organizing the Woman's Auxiliary, Whitley County Medical Society. The following officers were elected:

President.....Mrs. G. H. Buck
1st Vice-President.....Mrs. J. H. Parker
2nd Vice-President.....Mrs. G. T. Corum
3rd. Vice-President.....Mrs. W. C. Bryant
4th Vice-President.....Mrs. M. W. Steele
Secretary.....Mrs. L. L. Terrell
Treasurer.....Mrs. H. L. Walden
Mrs. W. H. Worsham was elected to honorary membership.

In the enforced absence of Mrs. Wm. M. Martin, Harlan, President-Elect, Woman's Auxiliary, Kentucky Medical Association, and Mrs. C. W. Cawood, Harlan, Councilor, Eleventh District, they were ably represented by Mrs. Nolan, Secretary, Harlan County Auxiliary, who rendered valuable assistance in organizing this, our youngest auxiliary.

With the interest and enthusiasm shown at this meeting, some of our older auxiliaries may find it expedient to look to their laurels in endeavor and accomplishment.

THE SOUTHERN AUXILIARY ANNUAL

About forty wives and several daughters of Kentucky doctors were fortunate, and shared the privilege of attending the annual meeting of the Southern Medical Association held in Atlanta, November 15th to 18th, and—a rare privilege it proved to be.

The annual meeting of the Woman's Auxiliary, Southern Medical Association was held Wednesday morning at ten o'clock at the Academy of Medicine, the charming and comfortably equipped headquarters of the Fulton County physicians. The President, Mrs. D. J. Williams, Gulfport, Mississippi, presided in her usual gra-

cious manner. About two hundred were in attendance. Guests of honor included Mrs. E. H. Cary, Dallas, Texas, the first president of the Southern Auxiliary, and the following officers of our National Organization, the Woman's Auxiliary, American Medical Association:

Mrs. F. P. Gengenback, Denver, Colorado, President; Mrs. John O. McReynolds, Dallas, Texas, President-Elect; Mrs. Seale Harris, Birmingham, Alabama, Past-President; Mrs. Irvin Abell, Louisville, Kentucky, Treasurer, and Mrs. Allen H. Bunce, Atlanta, Georgia, Secretary.

The address was ably made by Dr. A. T. McCormack, Louisville, Kentucky, Secretary of the Kentucky Medical Association, and State Health Officer. Among other stimulating and thoughtful suggestions, Dr. McCormack stressed the need of the medical profession for a greater emphasis on the altruistic values of professional service, and urged the Auxiliary to lend its aid in bringing to the minds of this profession that ever-vital maxim of the Great Physician, "What shall it profit a man, should he gain the whole world and lose his soul?"

Dr. C. C. Bass, New Orleans, President of the Southern Medical Association, and Dean of Medicine, Tulane University, brought happy greetings and good wishes from the Association to the Auxiliaries.

Reports were made by representatives from eleven states showing various types of interest and endeavor. Texas and Georgia led all the rest in accomplishment.

Kentucky was signally honored in the election of officers, when Mrs. A. T. McCormack was made President-Elect. The following is the list of officers for the ensuing year:

President.....Mrs. Stewart R. Roberts, Atlanta, Ga.
President-Elect.....Mrs. A. T. McCormack, Louisville, Ky.
1st. Vice-President.....Mrs. M. Y. Dabney, Birmingham, Ala.
2nd. Vice-President.....Mrs. Wm. P. McDowell, Norfolk, Va.
Recording Secretary.....Mrs. O. M. Marchman, Dallas, Texas
Corresponding Secretary.....Mrs. John B. Fitts, Atlanta, Ga.
Treasurer.....Mrs. Ernest Sullivan, Oklahoma City, Okla.
Parliamentarian.....Mrs. H. M. Stuckey, Sumter, S. C.

The president introduced the newly elected officers and Mrs. Stewart Roberts, our new president, made a gracious speech of acceptance.

The genuine hospitality, together with the delightful and lavish social entertainment, made our few days in Atlanta memorable indeed, and hopeful that we may all meet again in Memphis for the 1927 meeting.

IMPORTANT NOTICE

Will county secretaries please send news notices, dates of meeting and other important information for publication to the State Secretary? All items should be in the Secretary's hands before the first day of each month.

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COUNTY SOCIETY REPORTS

Third District Medical Society

The last meeting of the society for 1926 was held in Elkton, the Todd county society being the host. A rising vote of thanks was extended the M. E. Church, South for the use of its auditorium for the meeting; to the Rotary Club for the pleasure of meeting with them at the Community House, and to the Ladies' Club for the delightful luncheon served. We were greeted in a most cordial manner by the Mayor of Elkton, Mr. Weathers, and a Ladies Committee was present to assure us of the hearty welcome extended by the citizens of Elkton and the local Medical Society.

As is our custom, the society adjourned to meet in Bowling Green early in April 1927 for the first meeting of the next cycle. At this meeting officers for the year, 1927, will be elected. It is contemplated that this meeting be held in the new Bowling Green City Hospital. Other meetings will be held in June, August and October in different parts of the Third Councillor District, the effort being made to have at least one meeting each year geographically readily accessible to every physician in the District.

The only requirement for membership in this society is paid membership in the local County Society, no dues being required of the members. Even membership in the county society is not necessary for attendance at its meetings, the only financial obligation being, the payment of luncheon dues by each physician attending.

Having "done time" in the various offices in the Warren County Medical and in the surgical section of the Southern Medical Society we are forced to the conclusion that the work of a secretary is about the same whether in a local or larger medical society. The effort has been made to have at least two, or more, of our own members on the program for each meeting, with one or two visiting physicians from without the District for papers or lectures. And almost without exception we have found it more difficult to get one of the members of this society to respond with a paper or report on a clinical case than to secure the presence of some busy practitioner or surgeon from some distant city.

The attendance at our meetings has shown that there is a real interest in the society on the part of many of the physicians in all parts of the Third Councillor District, and as a rule they have entered into the discussions in such a way as to indicate that the profession throughout the District is thoroughly abreast of modern medicine in all its phases. With this knowledge of the ability of our members to do high-class work in all branches of medicine, we are appealing to them to respond to the call when we write them at an early date to prepare a paper or discussion for some one of our meetings.

JNO. H. BLACKBURN, Secy.



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EDITORIAL

THE AMERICAN COLLEGE OF PHYSICIANS

Announcement is made that The American College of Physicians will hold its Eleventh Annual Clinical Session in Cleveland, Ohio, February 21-25, 1927. Dr. Alfred Stengel of Philadelphia is President of The College and Dr. John Phillips of Cleveland is the Chairman of the Program Committee. The program will be of unusual interest to Internists, (including Neurologists, Pediatricists, Roentgonologists, Pathologists, Dermatologists, Psychiatrists and other engaged in the field of Internal Medicine). The Cleveland hospitals and the Western Reserve University will co-operate with The College in the presentation of the program. These programs constitute each year a post-graduate week of Internal Medicine of outstanding merit.

During the mornings, there will be clinics and demonstrations at the various hospitals and in the laboratories of the Western Reserve University; during the afternoons, papers on various medical topics of The College from other parts of the United States and Canada; during the evenings, there will be formal addresses by distinguished guests, American or foreign, and by the President or other representatives of The College.

The American College of Physicians is a national organization in which Internists may find a common meeting ground for discussion of the special problems that concern them and through which the interests of Internal Medicine may have proper representation. Membership in this organization is limited to those in the field of Internal Medicine. While it is not a limited national society of specialists (mostly prominent medical teachers), it is not co-ordinal with large national or sectional organizations of physicians requiring no special professional qualifications. Its standards are high and many men of distinction in the profession are numbered among its members.

An invitation has been extended by The College to all qualified physicians and laboratory workers to attend the Cleveland Clinical Session. An attendance in excess of fifteen hundred is anticipated.

PREVENTION OF RABIES IN ANIMALS

It is now possible to actively immunize dogs and other domestic animals against rabies. This work was begun in Japan, and was introduced into this country in 1921. The method has been used extensively and successfully since that time. The treatment consists of a single subcutaneous injection of Canine Anti-Rabic Vaccine (Squibb). It is injected, preferably, at *two* points, to aid absorption. The ordinary dose is 5 cc.; for very large dogs, 10 cc. is necessary; and for other animals, the amount used is based on the body weight. The loose skin over the shoulder or back is a good site for injection. The skin should be thoroughly disinfected with iodine tincture, and the injection should be made with all aseptic precautions.

Since the dog is the most common source of rabies in man, a few words in regard to the early symptoms of the disease in dogs are in order. It is usually first manifest by a change in disposition. The dog becomes unusually affectionate, or it may show signs of irritability. Another early sign is a change in the character of the bark, which becomes a hoarse howl. The disease may develop in one of two forms: (a) *furios* rabies, (b) *paralytic* rabies.

In the furious type, the dog usually runs away from home, and wanders aimlessly about, biting animals and human beings. Swallowing becomes difficult and finally impossible, and there is increased salivation. Later a paralytic stage develops, beginning in the hind legs; or convulsions may appear. Death occurs in from three to six days after the onset of symptoms in this type of rabies.

In the paralytic or "dumb" rabies, paralysis of the lower jaw and spasms of deglutition develop, suggesting an obstruction in the throat. Persons attempting to remove the supposed obstruction, are often infected. In this type the animal usually dies on the third or fourth day. Dogs showing clinical symptoms of rabies should be killed at once, and the brains sent to the laboratory for examination. If an apparently normal dog bites anyone, it should be kept under observation for at least three weeks. Since a prolonged in-

cubation period may occur, it is safer to observe the animal for a longer period—up to six months.

All bites should be promptly cauterized. It has been conclusively proved that fuming nitric acid is the best cautery. It should be applied on the point of a tapered glass-rod, or drop by drop from a capillary pipette. Other agents—such as pure carbolic acid, iodine, silver nitrate, etc.—have comparatively little value. Cauterization with fuming nitric acid is of considerable value within the first forty-eight hours.

VACCINATION AND INOCULATION OF C. M. T. C. TRAINERS

The attention of all physicians who perform vaccinations and inoculations of candidate for Citizens' Military Training Camps is invited to the fact that many men have come to camp in the past without a record signed by the physician who performed the immunizations.

The Army Medical Department desires to remind the physicians who are kind enough to do this work that when the young men cannot produce evidence of having received the vaccination and inoculation, the same are again done at camp.

In order to obviate this repetition, which is very distasteful to the men, it is especially requested that the blank certificates furnished by the Headquarters, Fifth Corps Area, be filled out and returned to the C. H. T. C. Officer there. Additional certificates should be filled out for the men so that they may hold them personally.

Subcutaneous Tuberculous Gummas Observed in Infancy.—Pehu discusses the evolution of the subcutaneous tuberculous gummas which develop in infancy independently of lesions of the bone or synovial membrane, and examines their place in the general scheme of the infection. The primary site of tuberculosis in infancy is most often the pulmonary parenchyma, but the lesion here may not be revealed by local physical signs nor be demonstrable by the roentgen ray. The second phase of the infection is characterized by involvement of the glands. Invasion of remote parts, forming the third phase, is not constant. If it occurs, it is often the skin which is affected. In infancy tuberculosis of the skin appears predominantly under the form of subcutaneous tuberculous gummas; in children over 3 years old, as erythema nodosum; in adolescents, as Bazin's erythema induratum.

ORIGINAL ARTICLES SYMPOSIUM ON COLITIS

BACTERIOLOGY OF COLITIS*

By VERNON ROBINS, Louisville.

I presume it is not improper to enlarge somewhat on this title and so I will regard it as though it read 'Microorganisms of Colitis.' Let us give a moment to considering the normal content of the intestines. At birth, you know, the meconium is sterile unless fetal infection has taken place, due to general infection in the mother. Shortly after birth, chance bacteria, staphylococci, streptococci, *B. Subtilis* and yeast are found entering the canal either from top or bottom and as time goes on with the further ingestion of bacterial laden food and drink, a more or less distinctive flora is established, as for example, the breast-fed baby, the artificially fed baby and the adult. This flora is capable of change due to variation and prolonged diet, feeding of cultures or alimentary infection. Is the development of an intestinal flora an advantage? We do know it is possible to raise animals with a sterile intestinal tract. While the normal flora may act as a protective against foreign invaders, we know that injury to the intestine brings a hazard that comes from the bacterial content of that viscous.

Dominant intestinal types:

B. Bifidus.

B. Acidophilus.

Enterococcus or *Micrococcus* *Ovale*.

Spore bearing Anaerobes; *B. Welchii*;

B. Sporogenes; *B. Putrificus*.

Spore bearing Aerobes; *B. Mesentericus*;

B. Cereus, etc.

And the old familiar *B. Colon*.

Spore bearing Aerobes usually strongly proteolytic are common in the lower intestine. The varieties found correspond to some of the varieties that are present in milk and water of the vicinity. These, and *B. Welchii* and to a certain extent the proteolytic Anaerobe *B. Acidophilus* and certain yeasts, constitute the principal flora of the large intestine.

When infection occurs such as in Dysentery and Cholera these organisms and others similar to them may dominate the intestinal flora, and a specific disease develop. The influence of cathartics, intestinal antiseptics and starvation have little value in affecting a change in the bacterial contents, but changes in diet so far as to limit or supply the optimum food stuff for certain types, are

*Read in Symposium on Colitis before the Jefferson County Medical Society.

apparently the most controlling factors. An increase in carbohydrates may lead to a flora dominated by *B. Acidophilus* types, not all carbohydrates, however, have an equal tendency to bring about this transformation to a dominant permanent flora. Torrey says, lactose and dextrose are more effective. It is very doubtful if *B. Bulgaricus* ever becomes acclimated. A carbohydrate diet therefore, would seem to be beneficial in typhoid and dysentery diseases, as these specific agents will act on the available carbohydrates instead of protein, thereby producing acid, which in turn will tend to limit the number of these bacteria. This fact is the basis of the present method of feeding such cases enough suitable food instead of starving them so that loss of nitrogen and the body weight will be prevented and toxemia lessened.

AMEBIC DYSENTERY.

This is a disease of tropical countries but also seen in temperate ones, characterized by bloody diarrhea and progressive emaciation. The lesions observed in the intestines on post mortem are swollen, congested mucosa with numerous, scattered, small undermined ulcers with amoebae in and between the epithelial cells and later in the connective tissue at the yellowish red base of the ulcers. Healing takes place by scar formation which sometimes is massive.

Diagnosis by microscope consists in searching for the entamoeba histolytica which in acute cases is found in great abundance in the bloody pus or mucous flakes. If examined unstained the active form will show great motility which will continue for thirty minutes to one hour at laboratory temperature, although it is recommended that the bowel discharge be collected in a warm vessel to maintain motility.

The differentiation between the living pathogenic type and the harmless *Entamoeba coli* is, according to Craig, as follows: "Larger size, greenish color, distinctly hyaline, refractile ectoplasm, faint muscles, many vacuoles, red blood cells and marked motility. In the vegetative stage of the *Entamoeba coli*, a reproduction occurs, and the cell breaks up into eight daughter cells, while the histolytica is characterized by not more than four. The cysts of the pathogenic type which represent a latent stage are much less easy to find and identify. The active form of the amoeba is very sensitive to outside influence, even plain water. In the stools it is easily killed by hydrogen peroxide, potassium permanganate and dilute acids, but the encysted forms can stand freezing and prolonged drying. Emetine has a killing ef-

fect upon this Amoeba. Twenty-five per cent of cases are fatal. Twelve per cent of recovered cases become carriers. Kittens, dogs and monkeys are susceptible to this disease. It is propagated by the infected feces. (urine does not carry the virus).

Differential diagnosis between this and bacillary dysentery, clinically: Amoebic Dysentery is generally chronic, abscess of liver is frequent sequela, feces are alkaline, no severe toxic symptoms, no immunity is given by a previous attack. In Bacillary Dysentery finding the bacilli and a positive agglutination test proves the diagnosis from the laboratory standpoint.

BACILLARY DYSENTERY.

General characteristics of the specific germ are short, rod-shaped with rounded ends, non spore forming but with polar granules, staining readily but negatively to Grams, motility feeble, if any, pathogenic to man and some of the lower animals, producing a highly poisonous endotoxin. There are four races of this germ. Shiga, Flexner, His and Strong.

The Shiga Serum will agglutinate only the Shiga bacillus.

The Flexner Serum will agglutinate the Flexner and His bacillus.

The Strong Serum will agglutinate only the Strong bacillus.

Subcutaneous injection of the Shiga bacillus produces Dysentery in the rabbit, dog, rat, mouse, but not in guinea pig. Subcutaneous injection of the other bacillus strains produces no result, but if injected peritoneally it causes a fatal peritonitis in the guinea pig, rat and mouse. The germ is isolated by washing a flake of bloody or purulent mucus in sterile broth or normal saline to free it of gross impurities and then smearing it on the endo plate, fishing the colorless or blue colonies that develop after twenty-four hours at thirty-seven degrees C. and testing out by agglutinating sera. Characteristics of the disease in man at the outset of acute dysentery is sudden, ushered in by cramp, diarrhea and tenesmus after incubation of two to four days. It is a disease of the mucous membrane, of the large intestine, involving the epithelium chiefly. In light cases a catarrhal inflammation is present, in severe cases the lymph follicles swell and some necrosis takes place. In more severe cases the lesions are diphtheric in character, the entire lumen of the intestines may be filled with a fibrous mass of pseudo membrane. The bacteria are only found in the intestines. Bacteriologic diagnosis is secured either by isolating and identifying the specific agent from the stools or a blood agglutination test (1-50) occurring about the eighth or tenth day of the di-

sease. A high degree of immunity usually follows an attack. A very curative serum is obtainable by animal inoculation. This germ has considerable vital resistance living six to fifteen days in dry air, three to four days in dry sand, five to seven days in dried culture. Dejecta buried in the soil will show living bacteria for from thirty to ninety days and Dejecta on linen, folded up, will show vital bacteria for more than thirty days.

Carriers: Temporary or permanent are found from 5 to 7 per cent.

Geographical distribution: General, found in both hot and cold countries.

Sir Alfred Keogh says, of all armies, that of the United States is most subject to Dysentery.

SOME OTHER CAUSATIVE FACTORS IN COLITIS.

Proteus Vulgaris: This bacillus varies greatly in size, usually are very small rods but filaments are sometimes seen. It is Aerobic, faeculent, Anaerobic, liquifying, motile, fermenting: glucose, sucrose, and maltose with acid and gas production, grows rapidly at room temperature, stains easily, is Gram negative and develops pathogenic power, ranking next to *B. Coli* in the causation of Cystitis and Pyelo-nephritis. It is the ranking organism in the alvine discharges of Cholera infantum in which the symptoms are drowsiness, stupor, great reduction in flesh, more or less collapse, frequent vomiting and purging with watery, offensive stools. Its power to split proteins brings it into the field of food poisonings.

B. Pyocyaneus.

Enterococcus of Thierrcelin.

Spirillum Dysentery.

Bilharzia (*Schistosoma mansoni*) is observed in the Congo and it is not uncommon to find the eggs in the urine as well as the faeces.

Balantidium Coli is observed in the Philippines, Russia and Finland.

Chilomastix—*Trichomonas* and the *Giardia Lamblia*: The flagellates of the intestines may produce diarrhea though some observers deny even this role to them, they certainly do not produce dysentery in the strict sense of the word. The *Giardia Lamblia* are parasitic in the intestine of mice, rats, rabbits, dogs, cats, sheep and human beings. The organisms are beet shaped, bilaterally symmetrical, ten to twenty-one microns long by five to eleven wide, possessing four pairs of flagella, the nucleus is situated anteriorly and has a central constriction, the protoplasm is thick and hyaline. Infection follows the ingestion of the cysts with unclean food. Calomel internally is recommended to rid the system of their presence.

One case of *giardia* has come to my attention; a veterinarian, who has never been out of the United States, suffered repeated attacks of diarrhea, characterized by slimy stools, four to six nightly, attended by very little other physical disturbance, the general health being good. These attacks would last for several months, followed by a month of comparative freedom from symptoms. The faeces showed large amounts of the *Giardia* flagellate and the administration of two doses of Emetine gave almost immediate relief.

ETIOLOGY AND MORBID ANATOMY OF COLITIS.*

By D. M. Cox, Louisville.

Colitis is an inflammatory condition of the colon brought about by mechanical, physical or chemical injurious agents.

Some of the mechanical agents are cancer, masses of parasites, adhesions, kinks, hernias, extrinsic tumors and abnormalities.

Physical agents include extremes of temperature, radium and x-ray.

Chemical agents may be divided into inorganic and organic. Under the inorganic we have acids, alkalis and the heavy metals, as mercury, lead and arsenic. Under the organic form of chemical agents are the toxins of the various infectious agents, as tuberculosis, lues, bacillary dysentery, entameba histolytica, typhoid, streptococcus, staphylococcus and certain strains of colon bacillus. Some of these, particularly syphilis, produce a very mild toxin, but the injury is accomplished by blocking of the blood supply and excessive fibrous tissue with its subsequent cicatrization. Also a nitrogenous product excreted in some cases of uremia.

A fourth class of unknown origin, as mucous colitis.

The pathology caused by mechanical injurious agents varies with the type of agent. First we have cancer, which is most common in the sigmoid, then the cecum, but may occur any place in the colon. Cancer is a local condition, arising usually in a circumscribed area of mucosa from the glandular epithelium. The growth soon reaches the submucosa and there extends in all directions, soon involves the entire circumference of the intestine causing a marked thickening of the wall and a gradual diminution in the size of the lumen at that point and a compensatory dilation above.

Masses of parasites may cause a local irritation in any part of the colon and very rarely may cause obstruction.

*Read in Symposium on Colitis before the Jefferson County Medical Society.

Adhesions either post-operative or tuberculous in origin may form in such a manner as to cause a kink or circular obstruction of the intestine.

Hernia of the large intestine is not uncommon, the sigmoid may frequently be found in an inguinal, femoral or ventral hernia. The cecum may be found in retroperitoneal hernia.

Extrinsic tumors as (1) leiomyoma, (fibroid), (2) pregnancy, (3) hypertrophied spleen, (4) hypernephroma and sometimes a retro-displacement of the uterus, causes pressure and partial or complete obstruction; congenital abnormalities as multiple diverticula and idiopathic dilatation commonly called Hirschsprung's disease, when they occur usually give rise to an inflammatory condition and to faulty elimination, thus fostering infection of the static intestinal contents and an absorption of the toxins thus produced. A portion of the intestinal contents may become lodged in a diverticulum and either by chronic irritation or the absorption of toxins, cause an inflammatory reaction.

Under the physical agents there is X-Ray and radium. In recent years their application in malignancy about the pelvis has frequently caused a toxic condition of varying severity of the sigmoid and rectum. Extremes of temperature, as a very hot enema, have been known to cause necrosis of the superficial portions. Secondary infection may occur with sloughing and ulceration.

Corrosive sublimate is an example of an inorganic chemical agent, which sometimes produces an intense colitis, apparently owing to the fact that it passes along quickly through the intestinal tract until it reaches the lower end, or after absorption it is re-excreted into the colon, where it causes necrosis of the mucous membrane and an acute inflammatory exudate. There is formed a diphtheric membrane which, together with the underlying mucosa, may slough, forming an open ulcer, varying considerably in size and depth. There are many instances on record where, by mistake, a person has taken an enema of some acid or alkali with resulting necrosis, sloughing, acute inflammatory reaction, scar formation, contraction, stricture and even obstruction.

A large majority of the organic chemical agents are the toxins produced by the various micro-organisms and the toxins derived from the necrotic material produced in an infectious process. Some of these infectious lesions are very characteristic of the infectious agents which produce them. Others have to be classed anatomically.

Tuberculosis of the colon most usually fol-

lows pulmonary tuberculosis or some other primary focus, occurs most often in the cecum, but may occur any place in the colon. The tuberculous ulcers have the following characters: 1st: They are rounded or oval, in contra-distinction to the irregularly shaped ulcers of the small intestines, and frequently girdle the bowel. 2nd: The edges and base are infiltrated, often caseous. 3rd: The submucosa and muscularis are usually involved. If the process is very rapid, there is no attempt at healing, but if slow, there is proliferation of fibroblasts and scar formation which only very rarely advances to the point of stenosis of the intestine.

Syphilis may occur any place in the colon, but most frequently in the rectum. The lesion, unlike that of tuberculosis, and some other infectious lesions, tends in time to heal instead of spreading indefinitely, because the organisms after a varying length of time "die out" locally, apparently as the result of acquired immunity. The lesion starts as a diffuse gummatous infiltration of the mucous membrane and submucous tissue which becomes thickened and indurated. There may be sloughing of the necrotic material and ulcer formation. Cicatrization takes place in the submucous tissue, causing stricture, varying intensity, according to the size and location of the lesion.

Bacillary dysentery is an infection chiefly of colon, caused by a specific organism which may be found in the stools in about 65 per cent of the cases, if the stool is cultured hot. At first there is hyperemia of the mucosa and the secretion of abundant slimy, clear, mucoid fluid, which is later streaked with blood. The most prominent part of the folds become covered with a thick, dull layer of exudate, which constitutes a false membrane and is continuous with the dense, coagulated, dead layer of mucosa. Around this hemorrhage an intense inflammatory reaction with edema appears, which shuts off the blood supply. Necrosis and sloughing results, leaving ulcers varying considerably in breadth and depth.

Entameba histolytica, the cause of amebic dysentery, is widely spread, prevalent in Egypt, India and tropical countries. It is common throughout the United States, particularly in the South, where it is endemic, increasing sometimes to epidemic proportions. It is uncommon in children, males are more frequently affected. Of 182 cases reported by Johns Hopkins Hospital 171 were in males. Infection begins in the mucosa where there is formed a small ulcer which gradually spreads more or less extensively in the submucosa, undermining the mucosa. The

tissue gradually undergoes necrosis. Amebæ are often very numerous in the necrotic tissue. The gross picture is rather characteristic. The ulcerations extend widely beneath the mucosa, undermining in all directions, so that they are often connected by sinuous passages. The edges of the ulcers are swollen and gelatinous, owing to the serous and cellular exudation in them.

Typhoid infection frequently affects the colon, most commonly the cecum, but its pathology is principally in the small intestines and is so well known that it is only mentioned here.

Apart from these specific types just mentioned, there is a variety of ulcerative colitis, sometimes of great severity, not uncommon in England and the United States. It is as disease of adults, of unknown origin. The sexes are equally affected. Post mortem, the colon is dilated, often without hypertrophied walls; the ulceration, as a rule, limited to it and very extensive, the ulcers ranging in size from a pin's head to large areas, with infiltrated, rarely undermined, edges. No one organism has apparently any definite relation to the disease. According to Einhorn, the ulcers are most common in lower part of the descending colon. The proctoscope generally reveals a marked engorgement of the rectum, together with irritability, a tendency to bleed easily and a decrease in calibre (most likely caused by round-cell infiltration of the wall).

. Then, lastly, is the so-called mucous colitis, and in speaking of mucous colitis I have in mind that type in which hyper-secretion of mucus is the dominant symptom. A large amount of mucus may be passed in a variety of conditions, but true mucous colitis is a neurosis, which usually occurs in extremely nervous and irritable patients. It is no easy matter to determine whether the neurological condition is secondary to the colitis or *vice versa*. X-Ray examination shows the colon to be tonically contracted and irregularly segmented, cecum toneless, distended and often displaced. These are the most common findings but they are by no means constant.

Testing Stethoscopes.—With the help of a physicist (Johner) Tobler studied the transmission of sounds by various types of the stethoscope. Conduction of sound through a rubber tube becomes progressively impaired as the number of vibrations increase from 170 to 1,953 per second. A straight wooden stethoscope did much better. The worst results were given by the long rubber tubes of binauricular stethoscopes.

COLONIC DILATATION AND COLOPTOSIS, SURGICAL TREATMENT*

By J. HUNTER PEAK, Louisville

There is some doubt in my mind whether there ever existed a dilatation of the colon from colitic, but I can understand how a colitis might develop following some mechanical obstruction resulting in fecal accumulation or impaction. I have thought that, on account of existing starvation from withholding of food, considered dangerous because of its mechanical presence during the progress of colitis, thus weakening the intestinal musculature, that the gaseous accumulation resulting from bacterial invasion might cause dilation in many instances. But it is my opinion that in all cases excepting Hirschsprung's disease, the dilatation has been due to some mechanical interference with the onward excursion of the intestinal contents.

It may be readily understood that one cannot have ptosis of the colon without angulation at the normal flexures and at the point most dependent in the progress of the colon. It stands to reason that any mechanical interference with the onward movement of the intestinal contents would contribute to mechanical irritation of the inflamed areas of the intestine, and it would also contribute to the more rapid growth of the pathogenic micro-organisms causing colitis.

Hirschsprung's disease was so named because he was the first to classify the disease while writing upon the subject of "Congenital Idiopathic Dilatation of the Colon." This was in the year 1886.

Finney (1908) collected more than two hundred case reports, but Billard (1820) and Parry (1825) had reported cases. Barth (1870) suggested that in these cases there was always an elongated meso-colon which would admit of torsion that would account for the disease. Marfan (1895) suggested that the principal etiological factor was an exceedingly long colon. Fenwick (1900) observed a case with a definite constriction of the sphincter ani. Perthes (1905) concluded, on the basis of a case he had observed, that valve formation in the intestine was responsible for the condition. Walker and Griffiths (1893) suggested chronic colitis as a cause. The early age at which we find Hirschsprung's disease, and on account of the fact that colitis is more often found later in life, negatives this assumption in my mind. Lennander (1900) and Bing (1907) have both urged a neuropathic origin either through the

*Read in Symposium on Colitis before the Jefferson County Medical Society.

nerves or a segment of the cord; functional hypertrophy is supposed to take place above the paralyzed intestinal segment.

Any portion of the large intestine may be involved, but in one-third of the cases, reported the sigmoid was the site of involvement. In fifteen per cent of all the cases reported the entire length of the large intestine was dilated. The distended portion in many instances reached six inches in diameter. Its capacity is astounding. Formad's case contained forty pounds of feces. The walls of the intestine show marked changes and the meso-colon is greatly thickened and sometimes contains enlarged lymph nodes. Judd says that the mucosa is frequently pigmented. Microscopically, we find all the musculature hypertrophied. The patient gives a history of constipation early in life. Defecation occurs only after enemas and cathartics. Sometimes there is no intestinal movements for days, weeks, months, and some patients have been known to go for a year. When defecation does occur it is often followed for three or four days by diarrhea. The loops of the overfilled intestine can sometimes be palpated. After evacuation the intestine may be injected with barium and milk which will substantiate the diagnosis by use of the roentgen-ray.

True Hirschsprung's disease is a very rare condition occurring in early life, but pseudo-Hirschsprung's disease may be encountered at almost any age. I have seen but three cases, aged respectively ten, eleven and thirteen years, when the patients came under my observation. Two were boys and one a girl. It is claimed by some writers to be a disease of male children only. The boy of thirteen, and the girl of ten, came to operation. The boy of eleven, who had not defecated for several months, left the hospital after thorough evacuation,—the parents refusing operation,—and I have not heard from him since. There is no hope from conservative treatment, yet it might be tried in the very young. Surgical intervention gives the most satisfactory results. If not operated upon these patients become confirmed invalids subject to all sorts of digestive disturbances and their sequelæ.

As an aid to the treatment of colitis, any measure looking toward the prevention of intestinal stasis should be immediately instituted. Surgical treatment consists of correcting whatever anatomical anomaly found, but if the entire large intestine is at fault it should be resected. Since Lane and others have perfected the technique of this operation, I do not see why it should not be accomplished by any good surgeon. If only a

certain portion of the intestine is involved, then, of course, resect only that portion, or the amount necessary to accomplish a proper anastomosis; such, for example, as the resection of the sigmoid, as in one-third of all the cases the sigmoid alone is involved. Finney has advised an enterostomy above the dilatation, and then after repeated flushings and nutritive treatment later do a resection of the dilated parts.

Colopexy, or colonic implantation, permanent colostomy, entero-anastomosis and various other procedures have been carried out in many individual cases,—every case being a law unto itself,—but they have little to recommend them over resection except in isolated cases, such as the two I have operated upon.

CASE 1. Male, aged thirteen, operated upon at the Sts. Mary and Elizabeth Hospital, for intestinal obstruction. It was known from the history, observation and palpation that this patient had a vast amount of feces in the colon. The history was that he never defecated oftener than from one to six weeks, and then only after enemas and large doses of castor oil. Finally these failed and a diagnosis of intestinal obstruction was made and the patient was sent to the hospital by Dr. Gibbs, of Anderson County, Kentucky.

We are told by nearly all of the men who have observed these cases, that in many instances there are other anatomical anomalies. When the abdomen was opened in the median line we found that there was a misplaced ductus venosus; instead of forming the round ligament to the liver as we find normally, it was attached to the outer border of the ascending colon through what appeared to be a condition not unlike a small placenta. The duct had a bluish appearance very much like a normal umbilical cord, but there was no pulsation nor evidence of any very large blood vessel. The entire meso-colon was very much elongated. The transverse and descending portion of the colon was at least five or six inches in diameter. It had a meso-colon long enough to permit it to descend in a loop over the old venous duct, already mentioned, causing obstruction of the intestinal lumen through an extensive volvulus. Operation consisted in ligation of the duct at the umbilicus and its attachment to the ascending colon, and removing the ligament between sutures. This procedure entirely liberated the volvulus. The ascending colon was sutured in the right side where it belonged and that portion of the colon which would correspond normally to the splenic flexure was sutured to the abdominal wall, I should judge, at about the tenth rib, and as far backward as the size of the mass would

permit us to work. The descending colon was sutured to the left side as nearly in normal position as we could direct it. The sigmoid was sutured in three places to the abdominal wall below and to the left of the umbilicus. Then the prolapsed transverse colon was sutured in its place as nearly as the limited area would permit. The transverse colon in its implantation was accomplished by the technique of the "hammock operation" for gastropsis and coloptosis as recommended by Dr. Coffey.

As soon as the boy sufficiently rallied from the operative procedure, and it was permissible, we began enemas and large doses of castor oil, with one or two drops of croton oil in each teacup of castor oil. On the third day there was complete excretion of an astounding quantity of feces and all abdominal distension had entirely disappeared. From that time onward the boy made an uneventful recovery and had but little trouble subsequently from constipation.

The success in this case in my opinion was largely due not only to the excellent nursing care the boy had while in the hospital, but also the parents' subsequent care had a very great deal to do with it. They never permitted the boy to go more than twenty-four or forty-eight hours without the use of enemas or cathartics if he needed them. He has remained free from abdominal distension, which had been a troublesome factor all of his life, and he now seems to be in quite perfect health. Colitis was not, and never had been, a factor in this case.

CASE II. Female, aged ten, was referred to me by Dr. Settles, of Mount Washington, Kentucky, simply because she had a very great amount of abdominal distension and defecated only once every two or three months. At this time she was greatly distressed, with a constant desire to go to stool, when only a small amount of hard, dry fecal matter mixed with much mucus and blood would be discharged. Parenthetically, it might be said, I was out of the city at the time, and for me another surgeon recognizing the case as possibly colonic dilatation complicated with colitis, recommended an appendicostomy, which he did. His idea was, of course, that in this way colonic flushings would be facilitated particularly after enemas and active catharsis had produced free evacuation. On my return, two weeks after the operation, the girl was very much improved in health, and by close application and strenuous efforts her intestinal canal had been kept freely open, yet there was some tenderness and tympany which persisted, in my opinion, due to the colitis. After my return the ap-

pendicostomy was never of any use for colonic flushing, the opening had closed and I was unable to do any good with it, because as I remember the surgeon had reported that on account of the extreme smallness of the appendix he had found that his work was of very little usefulness.

Six weeks after the first operation in the foregoing case I operated upon the child at the Children's Hospital. A long incision was made in the median line one-half above and one-half below the umbilicus. The entire colon, except the sigmoid was very large though relatively empty for gas. There were only a few scattering hard fecal masses in different portions of the colon. The meso-colon was very long, much thickened with a great number of lymph nodes from the size of a pea to that of a walnut. There was a band of adhesion or plastic material extending from the hepatic flexure across the transverse colon passing over the transverse colon attaching the descending colon. This must have been a congenital condition, but the band of plastic material was extensive in length, yet there was no constriction of the intestine anywhere from its presence. This was divided between the descending colon and the transverse colon on the left and the ascending colon and the transverse colon on the right. It was found that the longest portion of it was binding the segments of the transverse colon. This was cut at each end and removed.

Briefly the subsequent operative measures in this case were identical with the ones in CASE I, with this exception: the sigmoid was not involved in the hypertrophy and was left surgically free. I found it to be quite easy to ligate and invert the appendix, which was done, and then the small appendicular incision was circumscribed and the amputated appendix removed. The wounds were closed without drainage.

The results in this case were not quite so satisfactory as in CASE I; while the boy's improvement was almost immediate, it was three or four months before the girl seemed to have entirely recovered from her abdominal distension and colitis. Instead of having an alvine evacuation every two or three months, she now defecated every two or three days, then there would be a slight diarrhea containing strings of mucus but no blood. I was never able to get the active co-operation of the mother in the after-treatment of this case. She seemed to think that the operation should have produced complete relief, and she gave her daughter very little attention subsequently.

I saw this patient once only after she left

the hospital following the last operation; that was eight months later when the mother and child reported at my office. The patient seemed to be perfectly well though she defecated only every two or three days but always copiously. In general her appearance was much improved. Before operation she was anemic, pale, colorless, badly distended and was suffering. Her mental attitude had changed more than her physical condition. Before operation she was apathetic and listless. At her last visit to my office she was bright, cheerful and happy.

COLITIS, SYMPTOMATOLOGY AND PROGNOSIS*

By B. J. O'CONNOR, Louisville.

Broadly speaking, the symptomatology and prognosis of inflammations of the large intestine is as varied as the etiological or causative factors.

These variations are due not only to the pathological changes, to the duration and course of the inflammation, but particularly rest in the finding and identification of the specific bacteria, the toxic food, the noxious chemical, or the systemic disease as the *materies morbi*.

In studying the symptomatology of colitis we must remember that colitis is often but part of a systemic disease, such as typhoid, or tuberculosis, amyloidosis, etc.; Also, that with but few exceptions, colitis is almost invariably preceded by, or attended with a certain amount of enteritis, or gastro-enteritis.

Mechanical colitis, if we may so designate the forms of entero-colitis due to drastic purgatives, corrosive poisons, also chronic types due to nematodes, protozoa, tumors and disorders of the circulation and secretion may also be considered.

Today we rarely find Colitis spoken of as a disease, since almost all forms of inflammation of the large bowel are grouped or classified according to etiology, rather than the predominant pathology.

Preventive medicine, oral, dental, and throat prophylaxis, purer drinking water, better preservation of foods and scientific feeding, have furthermore largely eradicated the vast majority of intestinal inflammations.

Considering the large intestine as an organ of absorption and assimilation of the end-products of digestion, also as a transit tube for the elimination of body poison and digestive wastes, we find evidences of its derangements as interesting and as vital as the mechanism of its physiology. The pe-

culiarities of its innervation governing its secretions, excretions and mobility are as closely allied in safeguarding its hosts as the functions of the carbureter, the timer and the compression in a gasoline engine.

All forms of acute inflammation of the colon have certain symptoms in common, which we shall briefly review.

Starting with diarrhea, we find that the number of bowel discharges may increase from three to thirty or more per day. The nature of the evacuations may vary; if there is an accompanying inflammation of the small intestines, they are greenish in color, with brownish particles or lumps, in a watery mucous fluid; whereas, if limited largely to the lower bowel, they are rather sero-sanguineous, mucoid, muco-sanguineous, or distinctly bloody.

A study of the stools in infants not only denotes the portion of the bowel at fault, but also points to the food stuff responsible; the foul greenish, lumpy semi-mucous-like stool denotes excessive fats, or fatty indigestion; the mushy, gaseous stool, of yellowish color, with sour odor, points to excess of carbohydrates. Diarrhea with either form of stool may cause excoriations of the buttocks.

Depending upon the frequency of the movements there is more or less tenesmus or straining which at times almost attains a strangury or brings about a prolapsus recti, or an intussusception coli. The restlessness, crying and discomfort is due not only to tenesmus but also to colic and disordered peristalsis. This colic is not always intermittent but may be a more boring constant ache or pain in the lower abdomen associated with a feeling of fulness and distension which disappears largely when the bowel is completely emptied.

A history of vomiting, nausea and profound anorexia often precedes and accompanies the diarrheal manifestations. Jaundice may also be found. The toxemia and abdominal discomfort brings about pallor, shock and prostration followed usually by a febrile reaction. The fever, often irregular and occasionally remittent, continues for days or weeks until the toxic elements are eliminated or immune reactions have occurred. The emaciation, loss of weight, anemia and weakness seen, parallels the severity and duration of the gastro-intestinal symptoms. If considerable blood is present in the stools the ear, lips and nails become pale. In addition to the anemia and anhydremia there is usually a leukopenia with a relative lymphocytosis. The skin may show urticarial or erythematous eruptions, evidencing systemic absorption from the bowel. The urine be-

*Read in Symposium on Colitis before the Jefferson County Medical Society.

comes highly concentrated, of a brownish color, and often contains albumin. Anuria and acute Bright's disease may follow. In acute types signs of meningeal irritation—even convulsions may be present, or lead to fatal terminations. Other objective symptoms that may be noted in addition to a diffuse tenderness over the abdomen are distension and isolated intestinal contractions. Auscultation reveals gurgling, or loud borborygmi.

In chronic forms of colitis, constipation or spastic constipation may alternate with copious evacuations of mucoid watery movements, the pain and tenderness being irregular and often disappearing with the passage of gas and feces. Temperature disturbances are not marked, but the longer the disturbances last, the greater the likelihood of a general depression and neurasthenia. Considerable weakness and emaciation with faulty digestion accompanies chronic states. Functional or nervous types of diarrhea may go on to chronic catarrhal inflammations and vice-versa. Chronic intestinal troubles may often subside completely with radical changes of habits, surroundings and better mental hygiene.

In the amebic types of dysentery, in addition to the foregoing, the frequency of nocturnal diarrhea, the history of previous similar attacks, the use of the proctoscope and microscope, and the therapeutic injections of emetine, make the diagnosis comparatively easy. Bacteriological examination of the stools establishes the diagnosis in the bacillary or streptococci dysenteries, in the cholerae, and in botulinus. In addition to such studies, animal experimentation and chemical tests may be required to definitely establish the diagnosis of ptomaine, mercurial, arsenical or other forms of gastro-enteritis. The identification of uncinaria, the ova of various nematodes in the stool may be indispensable in establishing a correct diagnosis and proper therapy.

The symptomatology in the majority of chronic forms of colitis, which are secondary in nature, are largely those of the primary disease. Tubercular and similar chronic affections of the colon often exist with but few localizing symptoms.

In muco-membranous colitis, we find a chronic, more or less intermittent form of disease, characterized by colic, colonic tenderness, digestive disturbances, and the appearance of large quantities of mucus, shreds, membranous, cast-like pieces from the bowel. Oxaluria and urinary irritative symptoms are present. Generally psycho-asthenia, gastro-intestinal prolapse, cholelithiasis, appen-

dicitis may accompany this derangement. In well-nourished individuals pelvic pathology or uterine complications often exist. In almost all cases distinctly neuropathic tendencies are found. With this glimpse of the symptomatology of colitis, it is plain that it would be almost impossible to differentiate the different forms of colitis without resort to a careful study of the history, a complete physical examination, with laboratory examinations of the stool, etc. in order to positively establish the exact cause and form of disease, and separate the toxic and ptomaine groups from the specific infectious diseases affecting the colon.

The prognosis of colitis is generally favorable, its duration depending upon removal of the cause, and correct treatment. Rarely acute cases prove fatal through marasmus, exhaustion, renal complications, attending septicæmic sequela or through convulsions.

In chronic types, prolonged measures of treatment, based chiefly on the etiology, will usually bring about a complete cure. The so-called terminal diarrheas coming on shortly before death are ordinarily easily recognized. Amebic dysentery and other ulcerative forms are amenable to local and systemic treatment. The healing of ulcerative lesions may necessitate surgery to overcome stricture and adhesions; in some instance the surgeon may be compelled to resort to colostomy, resection, suspension, or other radical procedures.

MECHANICAL THERAPY AND DIETETICS*

By R. R. ELMORE, Louisville.

My brief remarks are directed to the mechanical and dietetic treatment of colitis. These suggestions are based on the assumption that some malposition of the colon is not only present, but that such malposition is an aetiological factor of colitis. May I remind you that the posterior and lateral walls of the abdomen are capable of only limited expansion, while the anterior wall and especially that area between the umbilicus and the pubes has a tremendous potential expansion as seen in ascites and pregnancy. The normal visceral positions including the colon are dependent upon the influence of suspension as provided for by ligaments and mesenteries and upon the support afforded by the abdominal walls.

Rosewater has emphasized the value of the abdominal muscles in maintaining the abdominal viscera in their physiological position, also in the distribution of fluids in the

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abdominal viscera, including their secretions and circulation.

When the lower segment of the abdominal wall gives way the capacity of the abdominal cavity is increased and the abdominal organs, including the transverse colon, respond by sagging lower in the cavity. A painstaking and persevering efforts to restore the potency of anterior support will frequently be rewarded by disappearance of the clinical symptoms. This may occur in a patient who has made the rounds of doctors and bears many scars as evidence of adventures in pursuit of health or freedom from pain and discomfort. The tone of the abdominal wall may be improved by massage either manual or mechanical—the patient resting on back with hips elevated higher than the shoulders. A similar position should be assumed for physical exercise—such as flexing the limbs on the abdomen—of which many varieties may be practiced as may appeal to the physician.

So far as I know, the elastic abdominal support has been largely discontinued and properly so. The two types of non-elastic abdominal support are found in some form of cloth and mole skin adhesive. In recent years there has been a prolific output of many types of these supports and it is well to have several types at your command, as what may be comfortable for one patient may be uncomfortable for another. Simplicity of pattern and light weight are commendable characteristics. I have several types to which I will call your attention. In the application of these belts the patient should be in a recumbent position with one hip higher than the shoulders. The patient should be instructed to practise deep breathing for several minutes before applying the belt of whatever type. You will observe these belts are all comparatively narrow, designed to retract the abdominal wall from the umbilicus to the pubes. This narrow belt undoubtedly gives a better uplift to a sagging colon and is more comfortable than a broad belt extending upward to the costal arch.

DIETETICS

The eminent English anatomist, Keith, spoke in a discussion of the subject of alimentary toxemia by the Royal Society of Medicine at a meeting during 1912. Said this ablest of living anatomists: We seem drawn to the conclusion that it is not the organization of the great intestine that has failed, but that our modern dietary sets a task for which it is not adapted. In civilized modern communities the great bowel has to manipulate a dietary such as was never before prescribed to, in at any stage of its long

evolutionary history. If an engine runs unsatisfactorily it may not be from a fault of its mechanism, but from a defect in the fuel. Those who regard the great bowel as a useless structure blame the engine; for my part I stand by those who blame the fuel.

A resume of medical literature indicates a conflict of opinions on the dietetic treatment of colitis. The fundamental requirements of maintaining or improving the general nutrition should ever be uppermost in the mind of the medical attendant and any pathology of the stomach and small intestine should be provided for in the diet. In some sections the milk treatment—either sweet milk or some form of cultured milk—has attained great vogue and has given excellent results. Such a diet is most successfully administered with the patient at rest in bed for from 4 to 6 weeks. The milk given in small quantities at frequent intervals during the day from 7 a. m. to 8 p. m. the patient being on an out door porch if possible.

Massachusetts General Hospital daily diet for colitis—lean meat 300 grms. white of 8 eggs—2 slices of toast—macaroni 100 grms. Cream cheese 50 grms. Fat free milk, 2 glasses—approximate caloric value 2000 calories.

BREAKFAST

Fine cereal as farina or cream of wheat—bread—toast—rolls—made of fine white flour—white fish.

DINNER

Lean beef or veal—lean chicken—eggs, or cream cheese—puree of potato—lima beans—peas—bread—cereal puddings—egg deserts.

SUPPER

Meat and chicken as for dinner. Boiled rice—macaroni—white bread—boiled fat free milk.

THE KELLOGG DIETIC TREATMENT OF COLITIS

1—A low protein, bulky diet consisting largely of fruits, fresh vegetables and whole grain preparations.

2—The free use of bran or agar-agar, or a combination of both, at every meal. From one-half ounce to an ounce of cellulose daily seems to be necessary to stimulate the intestine to normal activity.

3—The use at every meal of a half-ounce to an ounce and a half of liquid petrolatum. In some cases an emulsion of liquid petrolatum gives more satisfactory results, and the best results are often obtained from the use of petrolatum which melts at the temperature of the body.

4—In very obstinate cases the patient takes—three or four times a day—a couple of tablespoonsful of bran and as much fruit

as he can eat. Fresh and stewed tomatoes are found to be especially useful. Lettuce and celery may be also used freely. The patient is allowed to take fruit between meals whenever he feels inclined to do so. For persons suffering from hyperacidity, non-acid fruits, like bananas, pears, white cherries, and mellons are used. Occasionally it is found advantageous to make the diet consist wholly of green vegetables, raw and cooked with bran or agar-agar. This regime will usually "clean off the tongue and get the bowels moving" three or four times a day, within four or five days. Occasionally the regime must be continued for a week or ten days.

5—At first it is occasionally necessary to use an enema at 80F. once a day. The patient should be required to go to stool on rising in the morning and after each meal.

6—In cases of colitis with spastic condition of the descending colon, the colon is treated by means of hot saline enemas, and afterward there is introduced into the colon—with the patient in the knee-chest position—several ounces of a liquid culture of *Bacillus bulgaricus* and *Bacillus bifidus*, to which is added a small amount of malt sugar and boiled starch, the purpose being to change the character of the bacteria growing in the colon and thus encourage the healing of the infected mucous surface.

Too much cannot be said in favor of bran and liquid petrolatum used in combination. One supplies bulk, which is necessary to stimulate the sluggish colon, and the other furnishes lubrication which is required on account of loss of the normal mucus due to degeneration of the mucous membrane which results from chronic infection.

7—In cases in which the mucous membrane is atrophied as the result of chronic proctitis, it is found very advantageous to introduce into the lower colon at night 3 or 4 ounces of a preparation of petrolatum which melts at the temperature of the body. Such a preparation may be made by melting together equal parts of liquid petrolatum and paraffin.

DISCUSSION

W. E. Applehaus: I feel that these excellent papers should not be passed up without some discussion.

The various essayists have shown the great amount of work done on infections of the large bowel. Colitis can be roughly grouped into two classes, namely: acute, which is most often either bacillary or toxic in origin, and characterized by sudden onset; or chronic forms which may be due to bacteria, parasites, intestinal indigestion or chemical irritation.

A great deal of work has been done to determine the exact causative organism in these chronic infected cases. Many authorities have taken the stand that the infection is primary in the large bowel; it is our opinion, however, that a great many of these cases are either the aftermath of some constitutional disease or they are secondary to foci of infection elsewhere in the body. We have seen a great number of such cases following attacks of pneumonia and influenza. In taking the history of a large number of these cases, I have been impressed with the many that begin with an attack of influenza.

Infections of the teeth, tonsils, posterior nares and accessory sinuses when cleared up, greatly improve many patients.

One thing not mentioned tonight is the amount of hydrochloric acid secreted by the stomach. In hyperacid cases, we find an irritated, atrophic, granular condition of the large bowel. The lumen of the bowel is usually contracted. Quite a different picture obtains in hypoacidity. We are all familiar with the findings in achylia gastrica.

We believe that the amount of hydrochloric acid secreted by the stomach can be likened to the guard or watchman of the lower intestinal tract. In low acid states, the bacteria from teeth, tonsils and posterior nares pass through the stomach unharmed to ply their warfare in the intestinal tract.

Diseased appendices and infections of the gall bladder must also be taken into account. If the source of infection is cleared up and the imperfections in the gastric function corrected, we can more easily deal with the local condition by our regular methods.

Curran Pope: It is well to remember that we should not think of bacteria in the colon as bacteria but as bacterial groups. There are nearly two thousand different strains of bacteria in the colon that may roughly be associated into twenty groups.

Do not be afraid of the bacillus coli, he is the champion of the colon. If we have normal bacterial and other conditions in the colon, the colon bacillus becomes a normal bacillus in the intestine. Under abnormal conditions it becomes pathogenic and may cause a great deal of trouble.

A further item of importance is that so long as there is a normal mucous membrane there will be no absorption of toxins or the entrance of bacteria and no infection; in other words, the colon is able to resist these bacterial conditions, and by using general measures to increase the bodily strength and resistance we may in that way bring about healing of the intestinal wall itself with restoration of health.

Ptosis is an absolutely relative thing in the entire abdomen. It does not make a particle of

difference if the colon extends downward into the lower extremity of the heel and comes back just so long as the colon empties itself regularly and completely. It is a question of mechanics and emptying, not position of the colon. It is a question of activity and manipulation of the food residue not appearance, shape and position.

Mucous colitis is oftentimes a neurosis and may become a marked neurosis. At times it is like the old game of battle dore and shuttle cock; the neurosis makes the mucous colitis worse; the mucous may in its turn make the neurosis worse. We will do well oftentimes to disregard the mucous colitis and direct our attention to the underlying condition in the general nervous system merely keeping the color as clear as possible.

With regard to the amoeba: What difference does it make whether an individual is in Alaska or the tropics, the heat of the body is the same in either place; the colon gets just as hot in Nome as in the tropics! Amebic infection may occur anywhere provided the colon remains at normal temperature. It is more frequent in the tropics because infection extends more rapidly, because the parasites live longer, and because there is greater opportunity for infection.

References has been made to general ptosis of the abdominal contents: Let me suggest a test to you for ptosis if you will take a patient suffering from abdominal ptosis and have him stand erect you will find usually that the pulse on one side is very much larger than on the other; if you will have some one stand behind the individual with both arms around him (as I illustrate to you) and press the lower abdominal wall tightly with a lifting movement you will find both pulses are equalized. That is an essential point to establish, because bandaging as a rule does not force the viscera back in position. The main advantage of a bandage or support is the restoring of intra-abdominal pressure and in that way relieving the intra-abdominal venous circulation thus lessening the weight of the various organs as the blood is driven out of the abdomen. For this purpose I have devised a special bandage. As we all know the Storm or any other ordinary type of abdominal bandage will slip upward after being applied, which is always very disagreeable to the patient. To overcome this I have had Dr. Storm make for me a bandage with two "leglets" that extends six inches downward on each thigh, and the patient simply steps into the bandage and when adjusted it is exactly like ordinary gymnasium trunks attached to the support. In that way it cannot slip upward, it is evenly adjusted, fits nicely and is comfortable. The object, of course, is to increase intra-abdominal pressure.

As to diet in colitis: There can be no general diet for all cases of colitis. There are two types

and one must determine whether he is dealing with the proteolytic type or the saccharo-butyric type. Until this is determined one does not know what kind of diet to give the patient. If it is the proteolytic type proteids should be reduced and vegetables increased; if it is the saccharo-butyric type, reduce the vegetables and increase the proteids. The mixed type is one of the most difficult of all forms to handle with our diet.

I wish I had time to touch upon the value of certain exercises, especially surf bathing and swimming, and upon hydrotherapy in general, both external and internal. Nor can I attempt to invade the field of electrotherapy where so much can be accomplished by these modalities. The field of physical therapy offers a rich harvest, for the therapist, but a few moments time is not sufficient to even mention its manifold possibilities.

Chas. K. Beck: Someone mentioned the tonsils and teeth as possible foci of infection in colitis. There are other things which must also be considered. The accessory nasal sinuses are undoubtedly quite frequently the foci of infection; there is a constant discharge of pus into the nasopharynx which the patient is continually swallowing; and this may become the source of infection just the same as the tonsils in colitis.

I want to speak of the first case reported by Dr. Peak: At that time I was assisting him, and remember very distinctly the anomaly he has described. Instead of the round ligament extending from the umbilicus to the liver, it extended to the cecum; it was about the size of the umbilical cord and looked very much like it. There was tremendous distension of the colon as Dr. Peak has stated.

The fetal circulation in this boy to the liver was just the same as it is in the adult.

Lowering of Glycemia After Injection of Sulphur.—Foucin and Sandor conclude that the reduction of glycemia following injection of sulphur is due not to a specific action of the sulphur molecule but to colloidal shock. This, they say, is proved by the following facts: The decrease of glycemia always parallels that of the leukocytosis. It occurs only in persons with vagotonia, particularly responsive to all shock-inducing agents. In normal persons glycemia remained unchanged and in those with sympatheticotonia it even increased. A similar decrease of glycemia could be induced by other colloidal substances besides sulphur. Sulphur cannot be considered a therapeutic agent in diabetes. Indeed, injections of a sulphur preparation, on six successive days, influenced neither glycemia, glycosuria nor acetonuria in diabetics.

SOME DIFFICULTIES IN THE DIAGNOSIS OF POLIOMYELITIS*

By JOHN J. MOREN, Louisville.

This title may appear to some as a rather common one, but it is a very important subject, and in view of our epidemic last year it is a timely question for discussion.

When I look backward over more than thirty years of neurological experience I can note many changes of opinions concerning poliomyelitis. With our advancement in knowledge has come new questions and today instead of being able to make a diagnosis promptly we are compelled in many cases to wait for observation.

How well I remember lecturers teaching that polio was characterized by the absence of sensory signs. Vague aches might occur in the early stage. Contrast this with the intense pains noted in the cases of 1925. I recall cases seen before 1900 which were rather easy to diagnose. No such pains occurred as mentioned in recent cases. In a few days the children were often ready to get out of bed. Such cases occur today, but other types are considered in this discussion.

In 1893 Dr. Dana defined polio as follows:

"Anterior poliomyelitis is a disease of the spinal cord, characterized by a motor paralysis of rapid onset, followed by muscular wasting, without sensory symptoms." In the late edition of his book, 1926, he says, "This disease results from an infection of the body by a specific organism which produces acute constitutional symptoms of a reactive character, this organism has an especial affinity for the central nervous system, whereby it usually produces an acute flaccid motor paralysis, in muscles segmentally grouped which subsequently undergo more or less atrophy."

He emphasizes the constitutional symptoms and implies that not all cases show paralysis. In other words cases may appear with only constitutional symptoms and never recognized as polio. How often this has occurred no one can say, and it remains as one of the difficulties of diagnosis.

As long as polio was regarded as a purely spinal disease its recognition was comparatively easy, but investigation of epidemics revealed the fact that other types occurred. In fact, many authors mentioned polio along with other types of infectious diseases of the nervous system.

Under the heading of Heine-Medin disease the following types are given:

Acute poliomyelitis, Laundry's disease, Bulbar pontine forms, Encephalitis Polyneu-

ritic form, Meningitis, Ataxic form, Abortive form.

Under the title of acute non-suppurative encephalitis, Dr. Dana gives the following:

"Acute non-suppurative encephalitis in an exudative and sometimes hemorrhagic inflammation of the brain, characterized by symptoms of general infection or toxæmia, of severe cerebral irritation, and the signs of local cerebral lesion. It is sometimes spoken of as a non-suppurative encephalitis, and as a curable encephalitis. The disease occurs as one form of the infection when an epidemic of anterior poliomyelitis occurs. In some of its forms, it is probably a rather common affection, complicating especially the acute infectious fevers of childhood and of influenza."

The disease then may be grouped in the following manner:

ACUTE AND SUBACUTE NON-SUPPURATIVE ENCEPHALITIS

1. Heine-Medin type of encephalitis due to the microbic infection which causes infantile paralysis. It is the encephalitic expression of an infantile paralysis infection.
2. Acute encephalitis, due to various other infections.
3. Polioencephalitis superior and inferior, due to influenzal and other infections.
4. Subacute encephalitis, the type form being known as encephalitis lethargica.

Whether these types are one and the same with different manifestations is not the question under discussion. It is the resemblance of certain types, arising from different causes to which I ask your attention. It shows the difficulty of diagnosis, and in many cases they cannot be recognized until sufficient time and observation has been made to warrant a conclusion or opinion.

It is a recognized fact that certain infectious diseases of the nervous system appear at different times of the year. Polio is a hot weather disease. Encephalitis appears in late winter and spring. However, both may occur at any time and add to the difficulty of differential diagnosis from complications arising from infections, as influenza, etc.

Last December after the epidemic of polio I saw a child six years old who had a "cold" for several days, followed by choreic movements. In two or three days she could not walk. The child said she was "dizzy." At this time she complained of pains in her legs, especially hips and knees. I saw her possibly two weeks after the onset.

On physical examination no reflexes could be obtained, but the child had been taking

*Read before the Louisville Medico-Chirurgical Society.

good doses of bromides. There was no paralysis or involvement of cranial nerves.

It was my opinion that this child had chorea. This was the opinion of the attending physician, but the first consultant held to the diagnosis of polio. It proved to be chorea and the child made a good recovery.

I have never seen chorea associated with polio. At the time I saw this case I had four other cases of chorea. Whether they were coincidental or was another phase of the infection I cannot say.

Polio does not occur associated with other diseases, neither does it appear to be found complicating severe injuries. Frequently a history of a fall preceding the onset is given by the parents, but I have never noted a frank polio in severe traumatic cases or any other chronic or infectious disease.

The opposite is true in encephalitis. I have seen encephalitis complicate injury, following operations, etc.

In considering a diagnosis the onset and development of symptoms is important. Polio shows paralytic symptoms early, usually in three to five days. Cases are on record appearing in eight days, but these are the exceptions, and if paralysis appears by the 8th day or later, other conditions must be suspected.

The following case illustrates the picture of multiple neuritis, which frequently resembles polio:

George H. aged 14. About the first of August had three days of indigestion, not sufficient to call a physician. Previous to this he had been playing quite a lot of tennis. The parents thought over-exertion and over-eating was the cause. During this illness he complained of pain through his chest. There was no history of fever or sweating. About two weeks later he began to notice a tingling in the hands and feet, later weakness and paralysis. I saw him at the request of Dr. Block for the first time August 25th. He complained a great deal of cramps in the calf muscles and a tenderness along the course of the nerves of all four extremities. His feet and hands felt numb, though they were exceedingly sensitive to touch.

Physical examination showed diminution of all types of sensation, decided motor weakness in all four extremities, with loss of deep and superficial reflexes. The muscular contraction to the electric current showed the reaction of degeneration of the muscles in the lower leg, and lower arm. He was put to bed, kept at complete rest, and at this date had good use of all four extremities. This has proven to be a case of multiple neuritis. The cause is undetermined.

The interesting point is that this case was

under observation during the period of the epidemic of poliomyelitis last summer and fall. Had the average physician seen this case they would have regarded it polio on account of the slight disturbance of sensation. Multiple neuritis is not common in childhood and appearing at the time of an epidemic would lead any one to suspect polio.

After the sixth week there was practically no loss of the cutaneous sensation, but there was from the beginning up to November or December, a positive disturbance of the deep sensibility. I based my diagnosis upon the slow onset, and loss of the deep or muscular sensation. In polio the loss of the muscular sensation never occur unless there is a pronounced inflammation of the cord proper, and if so the lesion then becomes a myelitis and not a poliomyelitis. Laboratory findings would not have been of material help in making a diagnosis in a case of multiple neuritis.

The initial symptoms of polio seems to cause most confusion. The reaction to the infection shows most commonly in digestive upsets, pulmonary signs, or meningeal symptoms. It is sufficient to mention these to you gentlemen as you are familiar with the manifestations and the possibility of errors when other symptoms are lacking.

The following case illustrates this difficulty:

Miss G. aged about 25. Has always been a healthy girl. On September 18th had an attack of indigestion and took castor oil. The menstrual period appeared about this time. On the 20th she was dizzy all day. On the 21st she went to work but had to return home on account of the dizziness, splitting headache and fever. She went to bed, and vomited frequently, temperature ranging as high as 104. Complained of pain in back of neck and top of shoulder. The family physician regarded the case as pneumonia. In a day or two she noted a weakness of the right leg. There was no complaint of numbness or loss of sensation. This weakness was sufficient that it required help to move the leg in bed. After her recovery from pneumonia she attempted to get out of bed, and fell to the floor. About this time severe pain developed in the leg and lasted, according to her statement, for fully a week. This was a nocturnal pain, coming on only at night. The pain started in the back and would go down to the feet. She could not straighten her legs on account of the pain. This pain was evidently very hard to control, as she did not sleep for three or four nights. She complained of full, distended abdomen, flatulency, and passed mucous stools. After the pain disappeared she tried to force herself

to walk, but it was very difficult. She could not lift her feet and would fall upon the slightest provocation.

This patient was seen on December 19th, at the suggestion of Dr. Morrison. At that time the right knee jerk was less than the left. No left achilles could be obtained. The right upper limb was smaller than the left, and the left calf was smaller than the right. On the 21st an electrical test was made, and all muscles responded to the faradic current, but the examinations showed the right anterior thigh and left anterior tibial were weaker than the corresponding muscles. There was a question as to whether the sensation was disturbed. At times I thought there was a diminution in the feet and at other times it appeared natural.

During all her illness there was no history of a disturbance of the bladder or rectal functions. This case brings up a nice point for differential diagnosis. I had in mind three conditions—poliomyelitis, multiple neuritis, and hemorrhage into the cord. Polio was prevailing at this time. Shortly before the development of the severe pains in the extremities she was menstruating and frequently slight hemorrhage into the cord occurs at this time. As her illness had lasted some three or four months before I saw her, disturbance of sensation could have subsided, leaving only muscular weakness and reflex alternations as a diagnostic clew.

No laboratory tests were made in this case. It would have been interesting to know the result of a lumbar puncture. A clear fluid with increased cell count would have suggested polio. The presence of blood would have favored hemorrhage.

After studying this case and considering the absence of vesical symptoms I am of the opinion that this was a case of polio. She has made a steady improvement and is now walking fairly well. The most difficult task is climbing the steps. The right knee "gives out."

There is a diminished patella reflex on right side. The left anterior tibial group are weak. Both achilles are diminished, possibly more on left side.

In the beginning with pain in chest and doubtful physical signs a diagnosis of pneumonia was justified. However, the patient states that she did not expectorate very much and in fact other symptoms troubled her more than her chest.

The paralysis of right leg with abdominal distention is most suggestive of cord involvement, and should attract attention at any time.

In the past few years the appearance of

epidemic encephalitis had added new difficulties. No confusion should occur in the typical types of both diseases. It is the atypical with menigeal signs that offer the greatest problems for diagnosis.

A type of encephalitis, so-called, neuritic or spinal, should not prove difficult. The pain is not characterized by severity, as much as a constant ache. Some cases have typical root pains. Those cases which I have seen have had a sub-acute onset, without paralysis or actual sensory loss. After a period of pain they either subside or develop cerebral symptoms characteristic of encephalitis, as delirium, lethargy, etc.

Cases are on record showing an atrophy of muscles, resembling the simple Aran-Duchenne and amyotrophic lateral sclerosis, but their onset was gradual and followed an acute illness in the past.

Meningeal or polo-encephalitis superior types of polio are not so easy of recognition. The following case is interesting:

Sylvia H. aged 8. During August she was not in the best health. Her tonsils had been removed. On September 19th she awoke with sick stomach in the early morning. Her mother administered calomel. On the 20th she vomited, temperature ranging to 103. On the 21st, she continued to vomit, and had temperature 101, and complained of severe pains in the knees. On the 22nd, their physician was called and he regarded the complaint as acidosis, as the child had had similar attacks and was relieved by alkalies. At this date she was aching all over and screamed with pain in her extremities, and on attempting to walk her knees "gave out" and she would "drop to the floor." Within two days time a pronounced stiffness of the neck, curvature of the back, arms and legs flexed on chest and abdomen, with no run of temperature. Vomiting persisted for two weeks. The rigidity persisted for about two weeks. During all of this time the child could scarcely be touched on account of general tenderness. There was no record of any cranial nerve involvement during this illness. She made a gradual improvement.

This patient was referred to me by Dr. Boggess, in December, 1925. Until this time the child had had difficulty in walking, but no trouble with the arms. Examination showed the pupils reacted slowly to light and accommodation. The tendon reflexes were slightly diminished. All muscles of the lower extremities responded to the electric current. She was complaining of soreness in the leg muscles. The gait was that of a slight foot drop, with a tendency to throw out the right foot and leg. She could walk fairly well on

the level, but when attempting to hurry she would lose her balance and fall. The right leg showed most weakness. She would stand on the left foot fairly well, but required help to stand on the right. There was no marked evidence of atrophy. The measurements were equal on both sides. Today the child can do the Charleston, use her roller skates and looks the picture of health. This case was referred to me as a poliomyelitis case. If it was polio it was a very mild spinal cord case with pronounced meningeal irritation. There was no laboratory test made in this case. It was considered, but the physician in charge felt that he was dealing with a polio case. However, a cerebro-spinal fluid examination would have confirmed or denied polio.

In the definition given by Dr. Dana he refers to the "constitutional symptoms of reactive character." This child certainly did show constitutional symptoms, but from all appearances she has escaped any damage to the central nervous system.

The meningeal symptoms predominated. As the fever subsided after the first week and the rigidity persisted, it evidently was not a meningitis, but meningismus, which is a symptom of the upper bulbar or polio encephalitis superior.

In epidemic encephalitis rigidity is not a prominent symptom. Frequently there is a slight stiffness of neck, but should it occur to the extent as manifested in the above case the fever rises and the patient loses ground, and grows worse. It is an unfavorable sign. In frank meningitis we have rigidity, Koenig sign, and no Babinski. Encephalitis may show rigidity, questionable Koenig and positive Babinski. Poliomyelitis, with meningeal signs, may show rigidity, may have Koenig sign, and no Babinski. Part of this rigidity is a manifestation of pain in the muscles of the extremities, which is not noted in encephalitis.

In the neuritic type of encephalitis there is often a muscular stiffness or rigidity, similar to that in paralysis agitans, but the limbs can be moved with ease.

In basal meningitis from other infections the diagnosis would require a period of observation. The prevailing epidemic or evidence of local infection, as otitis media, a cloudy cerebro-spinal fluid, the gradual progress of symptoms, with convulsions and unilateral cerebral symptoms will lead one to suspect other disease than polio.

However, many of these cases, as well as those of the acute, non-supporting encephalitis and abscess requires time and the aid of all tests to reach a conclusion and frequently we are left in the dark unless a

post-mortem revealed the true condition.

DISCUSSION

W. E. Gardner: I have listened to Dr. Moren's paper with a great deal of interest, as I always do on account of the practical way in which he presents the subject. I am sure we will agree with him very heartily that the diagnosis of poliomyelitis is not as easy as it appeared to be in former years when we did not have the question of encephalitis lethargica complicating the picture.

As stated by Dr. Moren, during an epidemic of poliomyelitis the sudden onset of flaccid paralysis after the prodromal stage, a few days of fever with symptoms of coryza and muscular pain, makes the diagnosis comparatively easy. In the absence of epidemic cases, however, the early symptoms are sometimes overlooked.

I consider it particularly fortunate that Dr. Moren presented his paper at this time, as according to most authorities we are now approaching the season when poliomyelitis appears to be more prevalent. We will recall seeing most of these cases from June to November, the greatest number occurring in August and September, very few during other months of the year.

We know poliomyelitis is essentially a segmental spinal cord disease as originally conceived by Dana and other authorities, and if this is kept in mind it will help us in the diagnosis. The paralysis is likely to be confined to spinal segments, not only to groups of muscles controlled by spinal segments, but sometimes individual muscles of certain groups are particularly prone to paralysis in this disorder.

When encephalitis is prevalent and when the various types of poliomyelitis, polioencephalitis and also polyneuritis present themselves in this general group of diseases, we are very much inclined to reserve the question of diagnosis for time to determine, and even then difficulties may be encountered. I believe a study of the spinal fluid should be made in all these cases. Dr. Moren frankly admits that in one or two of his cases the diagnosis would have been clearer if this had been done. Unfortunately the spinal fluids in poliomyelitis and encephalitis are often so much alike that we will have difficulties here; but we are able to exclude cerebrospinal meningitis, syphilis, tuberculosis meningitis and other cord conditions, particularly hemorrhage into the cord, to which Dr. Moren refers in one case. In poliomyelitis and in encephalitis there is an increase in the globulin content, and also an increase in the cell count. The increased cell count in poliomyelitis appears earlier than the increase in globulin. This is perhaps true in encephalitis also, and in both conditions, if we have an increase in the sugar content of the

spinal fluid. Determination of the sugar content is helpful in excluding tubercular meningitis and also post-diphtheritic paralysis that sometimes occur with epidemics of poliomyelitis. There has been described a bulbar type of poliomyelitis that very closely resembles post-diphtheritic paralysis, and sometimes we have difficulty here. In post-diphtheritic paralysis, however, we are more likely to have paralysis of the muscles of accommodation, with strabismus paralysis of the soft palate, etc., whereas, difficulty in deglutition, phonation, etc. are more characteristic of bulbar lesions. As I have had occasion to observe on many occasions, it is not always easy to make the diagnosis of poliomyelitis in the absence of an epidemic, and even in the presence of an epidemic, where we have influenza and encephalitis complicating the picture, the problem is rendered more difficult of solution.

The relationship between encephalitis lethargica and poliomyelitis is attracting attention of the medical profession more and more. Some authors claim both these disorders are due to the same form of streptococcal infection. It is stated in an article in one of the foreign medical journals for 1924 two investigators discovered the fact that there was a positive complement fixation between the serum from anterior poliomyelitis and serum from encephalitis lethargica. On account of this they attempted to treat encephalitis lethargica by intraspinal injection of serum from poliomyelitis cases, but owing to the severe reaction from this method the serum was later administered intravenously, and they report favorably on cases of encephalitis lethargica by the use of this serum from poliomyelitis cases.

The question naturally arises, what is the relationship, if any between poliomyelitis encephalitis, polyneuritis and the other disorders mentioned by Dr. Moren as belonging to the group of so called Heine-Medin diseases. The present trend of thought seems to be that further investigations will exclude poliomyelitis as a distinct entity at least, so far as etiology is concerned. Certainly the types we have been having in the last few years in combination with encephalitis lethargica places the latter in the general group of Heine-Medin disease. The question after all is, does poliomyelitis represent a distinct entity, or is it only a variety of a general group of diseases with very different clinical symptoms depending upon the particular portions of the central nervous system that are involved and if not the same microbe origin.

Morris Flexner: Dr. Moren has given us an excellent paper on a subject in which I have been much interested for quite a while. One reason we are now seeing more cases we are

suspicious of being poliomyelitis is because we are constantly on the lookout for them.

The diagnosis of poliomyelitis in the midst of an epidemic ought not to be difficult. It is in the sporadic cases that we have encountered the greatest difficulty in diagnosis, and these cases are seen every now and then.

I do not like to hear poliomyelitis discussed in terms of paralysis; we ought to think about it as a central nervous system infection; paralysis as a later manifestation. We should also have definitely fixed in mind that a great many of these cases can be cured before paralysis develops. We saw illustrations of that during the recent epidemic. Of course we know the disease occurs principally in childhood.

A few words about the clinical picture: The disease starts as a rule with headache, fever, gastrointestinal upsets, and usually there is slight rigidity of the neck or a suggestive Kernig. If lumbar puncture is done in suspicious cases those that are positive can be diagnosed early. This has been proven over and over again. A high cell count and positive globulin in the spinal fluid will as a rule be sufficient to make the diagnosis.

I believe convalescent serum is the best method of approach to the subject of therapy. Dr. J. W. Bruce and myself reported a case before this society a few months ago in which convalescent serum was given intraspinal and intravenously and the child made a complete recovery. The spinal fluid cell count was over 50, and the diagnosis was made within forty-eight hours. Some of these cases can be cured and paralysis prevented by repeated lumbar puncture, and if convalescent serum cannot be obtained that should be the method of choice. Personally I am prejudiced against the Rosenow serum which was dispensed quite freely by the State Board of Health during the last epidemic of poliomyelitis. I have not been convinced that Rosenow has isolated the cause of poliomyelitis in the streptococcus he describes. At the Rockefeller Institute experiments with Rosenow's serum and the so-called globoid bodies have been unsatisfactory. They were able to reproduce poliomyelitis after the mixture of Rosenow's serum with the globoid body, but could not reproduce the disease after mixture of the globoid body with convalescent serum. Those who used the Rosenow serum in the last epidemic of poliomyelitis did not get the favorable results with it that were obtained from convalescent serum.

I do not believe poliomyelitis and the ordinary lethargic encephalitis are one and the same disease or even closely related. The pathological picture is different, there are many things that are not in common; above all the vascular infiltration in the picture of encephalitis is much

more marked than in poliomyelitis; the paralysis which occur in poliomyelitis which are permanent do not occur in ordinary lethargic encephalitis as a rule. Of course polioencephalitis is only the cerebral form of poliomyelitis as Dr. Moren has stated. It presents one of the most distressing clinical pictures with which we come into contact. The first case I saw during the recent epidemic was one of polioencephalitis. The child had then been ill about a week, it was unable to swallow, it cried night and day, it had the so-called "mask" facial expression, and died within twenty-four hours. That is the type of case in which some good has been accomplished by the use of concentrated salt solution intravenously, relieving the edema.

I like to think of polioencephalitis as an acute infectious disease involving the central nervous system with paralysis in most instances and can be avoided by the use of convalescent serum. Dr. Draper reports a case observed within the first twenty-four hours. The spinal fluid cell count showed 500 to the cubic centimeter. Under the older methods of treatment that child would have been doomed to paralysis. He used large doses of convalescent serum intraspinously and intravenously and the child became perfectly well.

The child treated by Dr. Bruce and myself with convalescent serum recovered completely, is now riding horseback and enjoying life generally.

J. Rowan Morrison: Dr. Moren has handled the subject of the diagnosis of poliomyelitis in an extremely interesting way. I think some time ago we might have considered this disease rather easy of diagnosis, because we did not know as much about it as we think we know now. As we accumulate knowledge about certain diseases we are apt to get in the same condition Dr. Moren says the authorities have in Germany; they are so complicated, closely related, following acute influenza, respiratory affections, etc., that it is very difficult to make a diagnosis. The girl Dr. Moren spoke of my referring to him I only saw once. After an examination I immediately concluded that "it was no place for me!"

The diagnosis of poliomyelitis is not always easy, especially in the absence of an epidemic of the disease. Early diagnosis, however, is of the utmost importance if we expect to accomplish very much by treatment. My judgment is that there is much to be said and a great deal is probably to be learned about the treatment of this disease, particularly the administration of convalescent serum, etc. Most of us probably know very little about it, but serum therapy seems to be a step in the upward direction. By early treatment we may hope to prevent paralysis and other deformities which later require

orthopedic correction.

After all, it seems that the more we know about poliomyelitis cases the more ignorant we realize we are!

J. Garland Sherrill: The subject of poliomyelitis is very interesting to me because of a personal experience in a member of my own family. That happened many years ago when the diagnosis of infantile paralysis was often made after paralysis had occurred. At the present time it seems to be that some physicians are doing the same thing. If the conclusions of some of the other speakers are correct, there is a considerable field for making the diagnosis prior to the development of paralysis.

Like other surgeons, I have seen a number of children with scoliosis due to paralysis of certain muscles along the spine; apparently the result of poliomyelitis, and according to the history no diagnosis was made of the original disease until some time after its inception. In scoliosis it has been found that the muscles on either side of the back are practically destroyed because innervation is entirely gone. The same thing is true in paralysis of the arms. In the lower extremities paralysis may involve the extensor muscles of one group and the flexor muscles of another. Patients with flail legs thus reach the surgeon at a time when little improvement can be expected from treatment because the diagnosis of poliomyelitis was not made in the early stages of the disease.

If we can urge upon the profession the importance of recognizing symptoms indicative of the early stages of poliomyelitis, and emphasize the fact that the time to treat these unfortunate patients is before paralysis occurs, much good will be accomplished. After paralysis has developed some of them improve, some of the muscles respond to careful massage and manipulation, but the most important feature is to prevent paralysis by early diagnosis and proper treatment. I recall having heard the late Dr. An Morgan Vance make the statement that electricity was harmful in these paralytic cases, because electricity stimulated muscles that were active and had but little effect on the muscles that were inactive, rather increasing the deformity instead of limiting it. He was probably correct in this contention.

In the early stages of poliomyelitis much good can sometimes be accomplished by carefully applied apparatus, braces, etc.; in other words general orthopedic treatment. This disease is one of the blots on the profession because it leaves so many crippled children, and if we can do anything to prevent these cripples we are certainly accomplishing something worth while. If the administration of sera will prevent the development of paralysis, as claimed by some authorities, that represent an important step

in advance in the treatment of his disease. Much experimental work and study have been given this subject during recent years in the Rockefeller Institute and elsewhere and the results thus far secured have been of immense value.

Adolph O. Pfingst: In regard to the eye symptoms of poliomyelitis and encephalitis; In poliomyelitis, which is strictly a spinal cord disease, there are no eye symptoms so far as I am aware. We are all familiar with the fact that in encephalitis-lethargica one of the earliest symptoms is frequently manifested in an involvement of the eye muscles. Paresis of the extrinsic ocular and the levator palpebrae muscles is a common occurrence giving rise to ptosis and inability to rotate the eye in the direction of the affected muscle or muscles with coincident diplopia. Sometimes there are internal eye symptoms, such as optic neuritis, and very occasionally we find choked disc. I have seen two cases of this kind.

Owing to the frequency of eye involvements in encephalitis the oculist is frequently the first physician consulted by patients with encephalitis.

John J. Moren (in closing): I tried to limit my paper to the question of difficulties in the diagnosis of poliomyelitis, but those who have discussed it have dwelt more or less on the treatment, the prognosis, etc.

In the first place, I do not believe that poliomyelitis and encephalitis are one and the same disease; they are two separate and distinct diseases, there is no question about that.

In regard to early diagnosis: It is a recognized fact that quite a large percentage of encephalitis patients recover. In some of the cases mentioned in my paper, had spinal puncture been made it would doubtless have settled the question whether the patients had poliomyelitis. However, so far as the cerebrospinal fluid is concerned, it is only confirmatory, it is not diagnostic. Many patients with other disorders have increased globulin content and increased cell count, but associated with other symptoms examination of the spinal fluid leads to the diagnosis of poliomyelitis.

The main point I wished to make was to emphasize the importance of recognizing the initial symptoms, and then resorting to laboratory technique to confirm the diagnosis. Lumbar puncture will often be of assistance in eliminating or excluding other diseases, and it should be used as far as possible; but occasionally we are in position where it is difficult to obtain consent to perform lumbar puncture, consequently we have to rely on other manifestations. That is where we sometimes get into diagnostic difficulties.

SYMPOSIUM ON SYPHILIS

NEUROSYPHILIS*

By CHARLES W. JEFFERSON, Louisville.

On February 2, 1914, I read before the Jefferson County Medical Society, a paper on the Intraspinal Injection of Salvarsanized Blood Serum with reports of cases treated during 1913. I at that time urged the Swift-Ellis method of treatment as I believed it a great step forward in the therapy of neurosyphilis.

Today, after thirteen years of the use of this method of treatment and observation of quite a number of cases treated, I am more of the belief that this method should be used wherever possible, or in all cases of neurosyphilis where there is no contraindication.

A great many of the men and women treated as far back as 1913 and 1914 are active and attending to their various occupations today. In this discussion tonight I hope some of the members of the society will make reports on the present condition of their patients to whom I administered this treatment.

Neurosyphilis may be advantageously divided under the headings given by Julius Grinker (*Syphilis of the Nervous System*, Chapter XII, Volume X, Tice):

(1) Interstitial Syphilis, to which belong most forms hitherto treated under—

- (a) Cerebral,
- (b) Spinal,
- (c) Cerebrospinal.

(2) Parenchymatous Syphilis, among which are placed the diseases formerly grouped under parasyphilis or metasymphilis, namely:

- (a) Tabes,
- (b) General paresis,
- (c) Certain forms of progressive muscular atrophy.

INTERSTITIAL NEUROSYPHILIS

Cerebral syphilis is further divided into:

- (1) The vascular or arterial type.
- (2) The meningeal variety, affecting either cortex, or base.
- (3) The gummatous variety.

In syphilitic meningitis the meninges may be affected at the base or over the convexity, and are discussed under the heads of:

- (a) Syphilitic basillar meningitis.
- (b) Syphilitic meningitis of the convexity.

*Presented in Symposium on Syphilis, before the Jefferson County Medical Society.

In syphilitic processes of the cord the blood supply or cord substance may be affected and is spoken of as syphilitic myelitis, meningomyelitis, and Erb's spinal syphilis, and these conditions, as we know, produce a great variety of symptoms.

In the cerebrospinal type there are present both brain and cord symptoms.

PARENCHYMATOUS NEUROSYPHILIS

In tabes there is as a direct result of the syphilitic virus, a degeneration of the posterior columns of the cord. Tabes belongs to the parenchymatous group and is the most common organic disease of the spinal cord.

In general paresis there is a combination of nervous and mental symptoms and the condition also belongs to this group.

Syphilitic progressive muscular atrophy is produced by either anterior horn compression—from gumma or from meningeal exudates—which has involved the spinal root. These belong to interstitial syphilis, while the type of muscular atrophy appearing as an independent syphilitic affection is a form of parenchymatous neurosyphilis.

Pathology: Brain: In meningitis there is both a hyperplastic and gummatous process which involves the membranes of the brain. This may be an extension from other tissues, as a periostitis or ostitis, which finally involves the dura. Where the meninges are primarily involved there is a diffuse infiltration associated with a hyperplastic meningitis. The meningitis is usually over the base and convexity of the brain, but is at times localized, the sites most frequently affected being the interpeduncular area and the chiasm, which leads to involvement of the muscles of the eye and optic nerve. Gummatous formations in various sizes, or a diffuse infiltration, may occur. When the blood vessels are involved they may be completely obliterated or narrowed. When the blood supply is interfered with there is necrosis of the areas supplied. When degenerative changes in the blood vessels take place cerebral hemorrhage may occur.

Cord: Here the meninges, nerve roots and blood vessels may be involved. The lesions in the cord are either due to anemia produced by blood vessel changes or secondary to pressure from the thickened meninges. The gummatous thickening of the meninges may extend and involve the nerve roots. Areas of softening and necrosis in the cord occur from endarteritis, endophlebitis and thrombosis.

The cerebrospinal fluid undergoes well-marked changes in neurosyphilis. These changes consist sometimes in an increase in pressure, the normal being from 90 to 130 cu. m.m. water, increase of the formed ele-

ments. lymphocytes and leucocytes (normally from 5 to 6 lymphocytes may be found in each c.c. of spinal fluid), increase of globulin and a positive Wassermann reaction.

Nonne, one of the pioneers in nervous diseases, called these changes "the four reactions." It has been shown by systematic research that these fluid changes are found in quite a large percentage of cases soon after the disease has been contracted not only in the early part of the secondary stage, but also toward the end of the primary.

Hauptmann and Nonne found that many more positive reactions on the spinal fluid were obtained, when the fluid is gradually increased from the usual amount of 0.2 cu. m.m., to 0.4, 0.8, up to 1 cu. mm., and by this method that in general paresis the reaction is uniformly positive with the small quantities of spinal fluid, 0.2 cu. m.m., while with large quantities we also get positive reactions in cerebrospinal syphilis and in tabes. This procedure should be utilized for differential diagnosis between general paresis and cerebrospinal syphilis of the interstitial variety, and for differentiation between simple tabes and taboparesis. In the latter the smallest quantities will produce strong positive reactions.

In neurosyphilis a positive blood Wassermann is of great value, both in the diagnosis and treatment, while a negative is of little or no value. In early active neurosyphilis there should be 100 per cent positive reactions, while in late cases the percentage of positives is between 50 and 70.

As to the lymphocytes: Whenever the number is increased to 15 or more, it is considered pathological and is suggestive of chronic inflammatory changes of the meninges. The lymphocytes are increased in cerebrospinal syphilis in tabes and general paresis. A lymphocytosis is present in chronic inflammation, while in acute forms of meningitis, with the exception of tuberculosis, there is an increase in the polynuclear cells.

Quoting from Horgan (*Modern Aspects of Syphilis*, Oxford Medical Publications):

INCIDENCE OF PLEOCYTOSIS

(1) It is absent in functional and nervous diseases and neuroses, and healthy people.

(2) It is weakly positive in 15 per cent of cases of idiopathic epilepsy, 30 per cent of alcoholism, 30 per cent of apoplexy, 25 per cent of multiple sclerosis, 50 per cent of tumors of the central nervous system.

(3) It is positive in 40 per cent of secondary syphilis.

(4) It is strongly positive in 90 per cent of tabes, general paresis and cerebrospinal

syphilis.

He states: A pleocytosis probably signifies the presence of luetic organic nervous disease, especially if strongly positive. If nervous manifestations appear, it suddenly increases to strong positive. A high cell count need not necessarily be followed by progression of the disease in tabes or general paresis, though a high grade pleocytosis usually does accompany such progression. In stationary cases, and those that have run their course, a low cell count is often present. In the acute meningeal variety of cerebrospinal syphilis the pleocytosis may reach 3,000-4,000 cells per cu. m.m.

Increase in globulin is found in cerebrospinal syphilis, tabes and paresis. Globulin is also increased in other pathological meningeal conditions, in tuberculosis, influenza and pneumonia.

HORGAN'S INCIDENCE OF GLOBULIN IN THE LIQUOR

(1) It is absent in functional nervous diseases and cured cases of syphilis.

(2) It is weakly positive in 95 per cent of all non-syphilitic organic nervous diseases.

(3) It is positive in 95 per cent of all nervous syphilitic diseases.

(a) It may be fully positive in the early stages of nervous syphilis, running parallel with or immediately following pleocytosis.

(b) In imperfect, stationary, or in old cases that have run their course, it may not be so strongly marked.

The gold solution reaction is of outstanding significance in the examination of the cerebrospinal fluid. Schaffer's dextrose modification of Lange's method is in use at the Vienna hospitals. Most authorities are agreed that the gold solution cure is found in all stages of syphilis and that it may be a forerunner of all other changes in the cerebrospinal fluid of early syphilis.

Conclusions of Nonne based on work done in the Effendorf Hospital of Hamburg (Quoted from Julius Gruber, Syphilis of the Nervous System, Tice).

I. BLOOD EXAMINATION

Wassermann Reaction.

1. Positive. Is characteristic of syphilis with few exceptions and indicates that the individual has in some manner acquired the disease, either through heredity or by infection. The disease from which he suffers at present is not necessarily due to syphilis.

II. CEREBROSPINAL FLUID

1. Normal fluid. Pressure 90 to 130 cu. m.m. water, globulin reaction negatives, no

pleocytosis, not over 5 to 6 cells to the c.c. of fluid (Fuchs-Rosenthal).

2. Pathological Fluids.

(a) Increased pressure—over 150 cu. m.m. water.

(b) Globulin reaction positive.

(c) Increased cell count; indicates the presence of an organic nervous disorder, not necessarily syphilitic.

(d) If the disease is syphilis, the Wassermann test will be positive on the spinal fluid. If only 0.2 c.c. of fluid are required to give positive reaction, there is great probability that the patient will suffer from either paresis or taboparesis; it is much less probable that he is the subject of cerebrospinal syphilis or beginning tabes. In nearly all cases of cerebrospinal syphilis and of tabes the Wassermann becomes positive by the use of larger quantities of fluid, from 0.4 to 1 c.c.

Nonne's formulated typical findings for the three leading types of neurosyphilis are as follows:

1. Wassermann reaction on blood positive (100 per cent). Pressure increased.

2. Globulin reaction positive (95-100 per cent).

3. Lymphocytosis (95 per cent).

4. Wassermann in fluid:

(a) Positive in about 85-90 per cent with original method and 0.2 c.c. fluid.

(b) Positive in 100 per cent with large quantities of fluid.

1. Wassermann reactions on blood positive (60-70 per cent). Pressure usually increased.

2. Globulin reaction positive (95 per cent).

3. Lymphocytes positive (90 per cent).

4. Wassermann fluid.

(a) Positive in about 5-10 per cent with original methods and 0.2 c.c. fluid.

(b) Positive in 100 per cent with large quantities of fluid.

III. CEREBROSPINAL SYPHILIS

1. Wassermann on blood positive (80-90 per cent). Pressure frequently increased.

2. Globulin reaction usually positive, exceptionally negative.

3. Lymphocytes nearly always positive.

4. Wassermann fluid:

(a) Positive in about 10 per cent with original method and 0.2 c.c. fluid.

(b) Nearly always positive with larger

quantities of fluid. Of great value in differential diagnosis from multiple sclerosis, cerebral and spinal tumors, which are always negative.

Treatment: The same drugs used in the treatment of general syphilis are utilized in neurosyphilis and in most cases should be pushed to the point of tolerance during the various courses. The arsphenamines, inunctions, soluble and insoluble salts of mercury are used. Tryparsamid, which was developed at the Rockefeller Institute I have not used on account of the bad reports as to the production of optic atrophy. Bismuth has been disappointing and to me practically worthless.

The treatment of Von Wagner in general paresis is unquestionably in the experimental stage and is not practical for the physician in general practice and can only be applied in hospitals or institutions. This non-specific method seems to have given good results in some cases. The method consists in the injection into the skin of 2 c.c. of blood that has been removed from a case of untreated tertian malaria while in the midst of an attack of fever. After the patient has developed malaria he is permitted to pass through ten or twelve attacks of fever. Then quinine is administered to check the malaria. This is followed by the usual administration of the arsphenamines.

I have been using since 1913, in conjunction with the general treatment, the Swift-Ellis method of intraspinal injections of salvarsanized blood serum, which I consider today the most satisfactory method of treating neurosyphilis.

Quoting from Udo J. Wile and Harther L. Keim in a recent article, (*Journal A. M. A.*, Vol. 85 No. 17), it is stated, "In 1919, one of us (U. J. W.) together with K. C. Hasley, in discussing the question of serological cure in syphilis, expressed the belief that this did not necessarily parallel clinical cure, and that a positive Wassermann reaction on the blood in cases with a background of intensive treatment not only frequently accompanied clinical cure, but was also not inconsistent with the general good health of the person."

They have reached the following conclusions in the effect of treatment on spinal fluid in cerebrospinal syphilis in a critical analysis of one thousand spinal fluid examinations on 148 cases.

1. Deviations from the normal in spinal fluid, in acute cases of cerebrospinal syphilis occurring during the exanthematous period, tend to be reduced to normal, parallel with clinical improvement following intensive treatment.

2. This tendency toward normality in the abnormal spinal fluid is less noticeable in diffuse cerebrospinal syphilis occurring in the period of latency or with recurrences.

3. In cases of parenchymatous disease of the cerebrospinal system, notably in tabes and paresis, there is little or no simultaneous tendency toward a reduction of the diseased fluid to the normal even in cases in which clinical improvement is striking.

4. The most easily influenced constituent of the diseased fluid in all types of cases is its lymphocytic content; less easily influenced although still reducible in the acute cases, is the increase in globulin and albumin.

5. The colloidal gold curve may be reduced to normal in the early cases, but is influenced with difficulty by treatment in the later phases of the disease.

6. The least influenced by treatment in our series of cases is the Wassermann reaction. This tends to be reduced to normal in the very early or acute cases, but seems to be uninfluenced and more likely to be fixed in the late cases than any other of the changed constituents of the spinal fluid.

From the foregoing and work of the men quoted in this short paper it is evident that the longer a patient is allowed to go before treatment is started the more difficult it is to handle and reduce to normal these pathological findings in the fluid. Why wait until the cerebrospinal fluid shows evidence of active syphilis?

It has been stated by various members of the profession that neurosyphilis is encouraged and developed often by early intensive treatment, and the use of the arsphenamines before the appearance of a positive Wassermann and secondary symptoms. This may be true under conditions where a few doses of the arsphenamines were given with a smattering of mercury, where the amount and duration of treatment was inadequate. In my experience this statement is not borne out clinically or as to laboratory findings. In fact, the vast majority of patients who do not develop neurosyphilis are those in whom treatment is started in the chancre stage and continued over a period of from three to five years. The greater percentage of patients with neurosyphilis who come to us all for treatment are not the ones that have been treated in the manner outlined in the above statement, but, on the other hand, they are patients who have received the old line method of treatment (that is, waiting for secondary symptoms and then treated by mercury and the iodides for a period of three

years), or they are patients who have had inadequate or no treatment at all. I have found this the rule and not the exception.

Recently I have begun watching the cerebrospinal fluids of patients with recent chancres, cases in which the blood Wassermann is negative, and where intensive treatment was started immediately after the diagnosis was made from the smear. After a period of three years I intend bringing before the society a report on the findings in the cerebrospinal fluid taken at intervals in these cases during their three years of treatment. I feel convinced that the great majority will be negative, as I have found the blood of patients negative after years have elapsed, where early intensive treatment was given and continued over a period of from three to five years.

It is my belief that the great bulk of neurosyphilis can be prevented and I think we should look at it in this way, rather from a prophylactic standpoint, as I firmly believe that most cases could be prevented by the early administration of arsphenamine in full-size doses with courses of arsphenamine, mercury and the iodides during a period of from three to five years, treatment to be begun in the primary stage, where the diagnosis is made by the finding of the organism of syphilis in the chancre, before the blood is positive and before the cerebrospinal fluid shows any one or all of the four reactions.

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Control of Pressure in Intra-Uterine Injections of Iodized Oil.—Beclere believes that roentgen-ray exploration of the uterus and adnexa with the help of lipiodol cannot be complete unless the cervix is plugged, to prevent escape of the solution. This is especially important in testing tubal permeability. For this purpose he uses a canaliculated, olive-tipped rubber sound of suitable diameter. The iodized oil is injected under a pressure of 30 cm. of mercury (never more). Stress is laid on the fact that a constant pressure should be maintained throughout the examination, which requires at most, ten minutes. With the pressure controlled by a manometer and never exceeding 30 cm., pain or complication of any kind was never observed in his cases (more than thirty) so far. With a pressure of 40 cm. of mercury, the lipiodol may enter the blood vessels.

SYPHILIS OF THE GLANDULAR SYSTEM*

By CLAUDE S. EDDLEMAN, Louisville.

During the different stages of syphilis spirochaetes have been demonstrated in a variety of body tissue, ranging from the skin (initial lesion, secondary eruption, old scar tissue, etc.) to the central nervous system, thus showing that a widespread distribution exists. So it is not impossible that these organisms invade the glandular structures of the body and especially the lymphatic glands.

The adenopathy of syphilis is one of the characteristic features of the disease. Syphilographers have long recognized the affinity of the spirochete pallida for lymphoid tissue. The constant finding of spirochaetes in the lymph glands during all stages of the disease, and the infectiousness of the glandular material when injected into lower animals, leads us to believe that the lymphatics are possible sites of predilection for the spirochaetes.

It has been demonstrated experimentally on lower animals that the sites at which the spirochaetes accumulate in greater numbers are the lymphatic structures, so the same condition no doubt exists in man.

At the appearance of the initial lesion, or shortly thereafter, a lymphangitis and invasion of the lymphatic gland within the nearest region of the lesion occurs. The exact time of this glandular invasion and the extent of the enlargement varies, not according to the severity of the infection, but the resisting or protective power of the individual. The lymphatic glands, as we know, are the individual's protective powers against infections, hence the stronger the fighting power the sooner and more marked is the glandular enlargement; while, on the other hand, in the patient with low resisting power the glandular involvement is a slower process and is not so pronounced unless suppuration takes place.

Just how the spirochaeta or "syphilitic virus" is carried from the initial lesion to neighboring lymphatics, and from there to the lymphatic glands in remote parts of the body, may well be mentioned at this point. When the syphilitic virus in the initial lesion has sufficiently increased, it is attacked by the lymphocytes and through the lymph current is carried to the nearest lymphatic gland where an attempt is made to retard or destroy further growth and development of the infection. The spirochaetes, unlike most or-

*Presented in Symposium on Syphilis, before the Jefferson County Medical Society.

ganisms, are difficult to overcome or kill, so, on the contrary, the lymphatic glands seem to be a favorable site for further growth and development of the virus. Here a similar inflammatory process takes place as in the chancre; the lymphatic gland becomes more or less enlarged, palpation reveals a hard, indurated, movable mass, or it may enlarge to such size that it can easily be seen as a round or ovoid mass lying beneath the skin. As the syphilitic virus increases in amount, it is carried to other glands of the same group and later in the same manner to the neighboring lymphatics, etc., to finally enter the blood stream. The course of the virus into the blood stream would naturally depend on the location of the initial lesion or chancre. In genital chancre, with which we are most concerned, the course of the syphilitic virus is through the inguinal glands, iliac glands (glands of the abdominal cavity), receptaculum chlii, and thoracic duct. From the thoracic duct it is poured into the left subclavian vein, passing through the heart and lungs, then enters the arterial system to be carried by the general circulation and distributed throughout the body.

While this course of travel of the syphilitic virus is the one accepted by most authorities, yet we have no right to assume that the course is confined to the lymphatic current alone. We know that the lymphatic system constitutes a network between the body cells and tissues, lying in close proximity to the capillaries of the general circulation; and we know that the treponema is a motile organism, corkscrew in shape, therefore it would not seem impossible for this organism to make its way between the cellular structures, etc. into the smaller capillaries of the general circulation, and in this way directly enter the blood stream of the general circulation. Again, we know that, through the process of osmosis, the smaller capillaries of the general circulation have absorptive power of tissue fluids; therefore it would not seem impossible that tissue fluids containing syphilitic virus could be carried through the thin walls of the capillaries and poured into the venous circulation, and thus enter the blood stream independently of the lymphatic system.

While there is no positive evidence of either of the two latter described methods, yet E. Hoffman has demonstrated and reported finding treponemata in the blood stream with the appearance of the initial lesion, which would lead us to suspect that the treponema, at times may enter the general circulation by a more rapid method than being swept along by the slow current of the

lymphatic system.

After the syphilitic virus has been thrown into the general circulation, or blood stream, and distributed to the papillary layer of the skin, giving rise to the secondary manifestation, eruption, etc., it is at this stage (stage of generalization) that a more or less general adenopathy develops. The subcutaneous lymphatic glands undergo the same inflammatory reaction as the glands that drain the site of the initial lesion of the primary stage. They become larger than normal, and on palpation are easily detected as firm, hard, indurated nodules, lying beneath the skin, at times arranged in more or less beaded chains. As before stated, the size and extent of the enlargement varies with the resisting power of the individual, and not severity of the infection. In individuals with high resisting power the enlargement is more pronounced than in the strumous and weak with lower resistance.

The lymphatic glands during the stage of generalization do not enlarge to the size of those of the primary stage, which are usually large enough to be seen as round or ovoid masses lying beneath the skin, nor does supuration occur, for it is only in those glands with which the lymphatic vessels from the chancre communicate directly that suppuration may take place. "At this point it may be well to mention that the first gland involved in the course of the primary stage, the enlargement is more pronounced than neighboring glands or glandular involvement of later stages."

Of the superficial glands the ones in which enlargement or involvement is most easily detected or palpated, are the inguinal, popliteal, cervical, submental, posterior occipital (post auricular), epitrochlear, axillary, and the chain of glands located at the posterior edge of the sternocleidomastoid muscles. While the enlargement can easily be determined in the above enumerated superficial lymphatics, yet there is no doubt but all the six or seven hundred lymphatic glands of the body likewise undergo the same pathological change.

In the post-mortem work by Warthin in a series of examinations, he has shown that in syphilitic individuals the abdominal, thoracic and deeper-seated lymphatic glands had undergone the same change or involvement. In the older cases of syphilis, he found that these structures presented lymphoid atrophy, chronic sinus catarrh,—hyaline formation in the germ centers and lymphoid tissue. In younger lesions the glands were frequently hyperplastic, with enlargement of the germ

centers and lymphocyte exhaustion. Spirochaetes were demonstrated in both early and late infections.

McDonough, in his description of histological changes taking place within the lymph glands, stated that the small lymphatic glands, as occurring in individuals of low resisting power, are crowded with giant cells and small areas of necrosis. The predominating cells are mainly endothelial with a few leucocytes and a very small number of plasma cells, thus showing a feeble resistance. Spirochaetes are usually present and more often demonstrated than in patients having more marked glandular enlargement. The large lymphatic glands, as occurring in individuals with greater resisting power, show a similar change, except a small number of endothelial cells and many plasma cells, thus showing a higher resistance toward the infection. Occasionally, as stated before, glands within the region of a chancre may undergo suppuration, when it may become necessary to aspirate or incise and drain. This suppurative process takes place where there is a pyogenic infection associated with the syphilitic lesion, or in weak, strumous individuals with low resisting power.

Late gummatous and diffuse syphilitic lesions of subcutaneous lymphatic glands have been reported, but are rare and may be confused in diagnosis with Hodgkin's disease.

The adenopathy of syphilis may be of importance from both diagnosis and prognosis. The general enlargement of the superficial lymphatics is considered as a symptom of syphilis, yet it may be so slight as to be difficult to detect, and, again, it must not be forgotten that adenopathy often occurs in conditions other than syphilis, as in systemic infections, Hodgkin's disease, malignancy, tuberculosis and other diseases. Therefore, it can only be considered as one of the symptoms of a possible syphilitic infection. The glands that are of most value as an aid in the diagnosis of syphilis are: the popliteal, epitrochlear, inguinal and post auricular. Perhaps of these the epitrochlear gland is of the greatest importance.

As to prognosis: The individual with marked glandular involvement possesses a greater resisting force than the one with little or no glandular involvement, hence in marked cases we would figure on a more favorable course of the disease. Another point of importance, as referable to the lymphatic glands in syphilis, is the site of predilection of the spirochaetes. The spirochaetes have been demonstrated in lymphoid tissue during all stages of the disease,—primary, secondary and latent syphilis. This

ability to demonstrate the spirochaetes is not of value alone in diagnosis, but it proves to be the site in quiescent or latent cases, after all clinical symptoms have disappeared, and that the spirochaetes lie dormant or encapsulated to burst forth in later life with a recurrence of the disease. This may help to explain the existing condition in the so-called "syphilitic carriers" and the so-called "Wassermann fast" individuals.

Of the other glands of lymphoid structure, such as: adenoids, Peyer's patches, tonsils, thymus and spleen, but little has been definitely determined. We are not certain of the susceptibility of the adenoids, but like other lymphatic tissue we would naturally suppose that the same pathological changes exist. Perhaps in congenital syphilis the involvement of the adenoids explains or helps to explain the so-called "syphilitic snuffles" in the newborn. We know that Peyer's patches, as shown in post-mortem findings, are often the site of involvement in syphilis of the intestine. We are all familiar enough with the susceptibility of the tonsils, as most of us have seen some form of syphilis of the tonsil. The lesion may be primary, secondary or tertiary. The primary lesion of the tonsil is not unusual and is commonly seen in perverts. In active secondary syphilis the tonsils often not only show an enlargement in size, but destructive, ulcerative lesions may appear on the surface. In tertiary syphilis the tonsil is often the site of gummatous formation which causes great destruction of tonsillar tissue. Syphilis of the tonsil in any stage is often difficult to diagnose. It has been confused with other common pathological conditions, as tonsillitis, Vincent's angina, etc., and tonsillectomy performed to only result in a more serious condition. I have seen the disastrous results of two such operations.

Enlargement of the thymus gland, by some authorities, has been mentioned as being diagnostic of congenital syphilis. Infection of this gland has been described as "DuBois' abscesses" in which single or multiple abscesses occur within the gland substance. Possibly this has aroused more interest than other involvement of the thymus in syphilis. Hochsinger stated that, in congenital syphilis, the thymus may be markedly enlarged, which subsides under treatment. Adami states that both gummata and diffuse fibroid changes may be found.

As to syphilis of the spleen, likewise but little has been definitely determined. We know that the spleen is no more than a large lymphatic gland, therefore it would be reasonable to expect the same hyperplasia and

other changes to take place in this lymphatic structure during the generalization stage of syphilis as in the smaller lymphatics, although but few have reported or noted any abnormal enlargement of the spleen in early syphilis. In congenital syphilis splenic enlargement has been reported as a somewhat frequent finding. Still states that in 45 per cent of congenital syphilis the spleen was easily palpable. In tertiary syphilis, syphilitic splenitis occurs more often than in probably diagnoses. Like many other lesions of the internal organs, the diagnosis is usually made from post-mortem findings. McDonaugh states that it is often associated with syphilitic hepatitis, as was described by him. Perhaps the chief syphilitic lesions of the spleen are: simple hyperplasia, diffuse fibroid infiltration, and true gummata. Warthin, from his post-mortem findings, describes the pathological changes as: chronic passive congestion, atrophy and sclerosis of the splenic arterioles, as being found almost constantly in spleens of old syphilitics, and true gummata were also present in a few of the cases examined.

Of other glands of the body of non-lymphoid structure, as the thyroid, pituitary, adrenals, kidneys, mammary, testes and epididymes, prostate, ovary, pancreas, liver and salivary glands, the involvement is not so frequent as the lymphatic glands. According to most authorities, syphilis of the thyroid rarely occurs in both congenital and acquired lesions. Perhaps it occurs more often than is diagnosed or recognized. The diagnosis would rest entirely on a syphilitic history and laboratory findings, such as the Wassermann test. According to Thompson it may occur in both early and latent syphilis, and is more frequently seen in women than in men. Reimers stated that 50 per cent of early syphilis showed enlargement of the thyroid, and Mauriac claimed that it was common in early syphilis. Although the majority of case reports as recorded have been of latent syphilis, Frankel, Kohler, Clarke, Thompson and others have reported syphilis of the thyroid in latent infection. Pathologically, syphilis may involve any or all parts of the thyroid. The clinical picture may present nothing more than tumor, or there may be all the symptoms of a goiter. (Thompson). Histologically, thyroid involvement in early syphilis has yet to be described. In later cases it somewhat resembles that of tuberculosis. There may be epithelial and round cell infiltration, increased fibrous tissue, giant cells and proliferation or obliteration of the vessel walls, or it may present the picture of a gumma.

Syphilis of the pituitary body is undoubtedly rare, and diagnosis during life would seem impossible. However, a few cases have been reported by Simmonds, Schmidt, Cushing, Hadwick and others. In patients with glycosuria, acromegaly, gigantism and infantilism, a Wassermann test would be advisable.

Syphilitic lesions of the adrenals is not a rare condition in congenital syphilis, but most authorities consider it rare in acquired syphilis, although the post-mortem findings of Warthin show the presence of syphilitic lesions as occurring frequently, and spirochaetes often demonstrated. McIntosh and Fildes consider the suprarenal glands as one of the sites of predilection of the spirochaete. Clinically, syphilis of the adrenals is difficult to diagnose. The symptoms of Addison's disease are about the only signs shown. Diagnosis is made from the above mentioned symptoms, a history of syphilis, and a Wassermann test. Perhaps not more than ten cases have been clinically reported as syphilis of the adrenals,—by Gordon, Schaffner, Howard, Blum, Hirschmann, Deadrick, Thompson and others. Pathologically, the chief involvement is in the capsule and associated with atrophy of the cortex. Gummata and necrotic areas frequently occur in the medulla; small infiltration of plasma cells and lymphocytes occurring in the medulla or in the inner portion of the reticular zone of the cortex. The capsules and walls of the blood vessels are usually thickened. Fibrosis may be marked enough to produce atrophy of the entire organ. Spirochaetes are often demonstrated. (Warthin).

Syphilis of the kidney has been described and reported, in both acute and chronic nephritis and gummatous lesions. We know that, in early acute secondary stages, the kidney is often affected. Whether or not this is the result of toxins, or that of the kidney has really been invaded by the treponema, we are unable to say. It is known that the kidney is often affected by treatment, and the urine should always be examined at repeated intervals during the course of treatment. Hoffman reports finding of treponema in a catheterized specimen of urine. Whether this was a catheterized specimen from the kidney or the urinary bladder I am unable to say. In early syphilis of the kidney the involvement may be mild, or it may present the picture of an acute nephritis, and in these cases the amount of albumin is usually out of proportion to the number of casts. The amount of albumin has been reported as ranging from 32 to 100 grams to the liter of urine. The urine is scant in quantity and

of low specific gravity. Chronic nephritis occurs later in the disease. It may be parenchymatous or interstitial. In the parenchymatous type, the urine is scanty, specific gravity high, albumin positive, more or less, many hyaline and granular casts, edema usually present, and blood pressure normal or low. The interstitial type is characterized by polyuria, small amount of albumin, few hyaline casts, little or no edema, and blood pressure high. The amyloid kidney is characterized by large amounts of albumin, urine diminished in quantity, more or less anemia associated, edema of face and legs, blood pressure normal or low. Gummata of the kidney also occur in latent syphilis. The size of the gumma varies from a small lesion to a tumor mass large enough to be easily palpated. The symptoms vary according to size and location. Warthin states that the pathological changes are: chronic passive congestion, atrophy, infarction, local and diffuse inflammations. In forty-one cases examined he found seventeen of acute, sub-acute and chronic parenchymatous nephritis, and three of interstitial nephritis. Spirochaetes were not found.

The mammary gland may be the site of syphilitic involvement. Syphilitic mastitis is exceedingly rare, and only a very few such cases have been reported. It may occur during the early or late secondary and tertiary stages, and in congenital syphilis, more often affecting women than men. It may present a diffuse gummatus tumor or a diffuse syphilitic infiltration involving one or more lobes of the gland and extending into the surrounding tissue, or may consist of multiple nodules, more or less circumscribed, resulting in a tumor mass. The skin may or may not become adherent, pain may be present or absent, and the lymphatics of the axilla are usually affected. It is difficult to diagnose from malignancy and other lesions of the gland. The diagnosis rests on a syphilitic history and the Wassermann reaction.

Syphilis of the generative glandular structures, as the ovary, prostate, testes and epididymes, is very rare, excepting in the testes and epididymes. According to Hazen it is questionable if syphilis ever involves the ovary, and if so it is exceedingly rare. Various changes in the ovaries have been described, as simple enlargement, syphilitic oophoritis, sclerosis, gummata, etc., but no positive proof is apparent that such conditions are actually due to syphilis.

Syphilitic prostatitis is another rare condition. If it does exist more often than is supposed, the diagnosis is not made as such.

Thompson in reporting a case in 1918, in his survey of the literature on syphilis of the prostate, finds twenty-three such cases recorded. Out of this number (twenty-four in total) he accepts twelve as being syphilitic. Shortly afterward Warthin, in his report of a case which was one of the twelve accepted by Thompson, doubts the positive diagnosis and states that the only case, up to that time, on record of a positive diagnosis of syphilitic prostatitis is the one he had examined and diagnosed at necropsy in a boy aged nineteen killed accidentally. He based his diagnosis on syphilitic tissue changes in the prostate and demonstration of the spirochaetes. According to the case reports, the symptoms of syphilitic prostatitis are very similar to those of other diseases of the prostate,—such as prostatitis,—and differential diagnosis is hard to determine from simple hypertrophy and atrophy, gonorrheal prostatitis, tubercular prostatitis, carcinoma, etc. It must be made from the history of syphilis and the Wassermann reaction.

Syphilis of the testes is among the most frequent manifestations of the disease. Of the glandular structures it ranks next in frequency to the lymphatics. Perhaps owing to the anatomical location of the testis, the involvement is more easily observed than some of the more remote or hidden glandular structures. Numerous case reports have been recorded, and no doubt most of us have seen these cases in our own private practice. It may involve both the testicle and epididymis, or affect either structure with little or no involvement of the other. It is usually described as occurring in two forms, viz., interstitial or fibrinous orchitis, and gummata, although both forms may exist at the same time. Interstitial orchitis may occur during the first two or three months of the syphilitic infection, but usually during the first three or four years of the disease. Gummata occur later in the course of the disease. Keyes mentions a case of interstitial orchitis as early as the seventh month, and Powers reports a case in an old man (80 years of age) occurring sixty years after infection. The condition may be bilateral, but is usually unilateral. The amount of enlargement may be slight, or the organ may enlarge to an enormous size. Occasionally slight hydrocele forms. The onset in the interstitial type is slow and gradual, usually painless, the testis is not sensitive to pressure. On palpation the organ feels intensely hardened, like a billiard ball in the scrotum. Gummata, as before stated, occur later in the course of the disease, rarely before the eighth or tenth

year. The gumma may be either bilateral or unilateral, usually, the latter. More or less tenderness will be noted on pressure. On palpation firm nodules are felt, single or multiple, which may coalesce forming a tumor mass of enormous size. Not infrequently this mass breaks down and forms a discharging sinus through the scrotum. The diagnosis must be made from gonorrheal, traumatic, and tubercular orchitis, and from benign and malignant tumors. Warthin describes the testis as showing a varying degree of atrophy and fibrosis; in active cases plasma cells and lymphocyte infiltration between the tubules, fibroblastic proliferation of the stroma, thickening of the basement membrane, and presence of spermatogenesis; in the older cases the germinal epithelium may be entirely lost, the tubules collapsed or represented entirely by hyaline basement membrane. The interstitial cells remain preserved, and may appear hypertrophic. The stroma between the tubes is thickened and hyaline. In severe cases the entire testicle becomes fibroid.

In the epididymis syphilis is perhaps not as frequently seen as in the testicle. Thompson states that among two hundred and seventy-six patients he found six with syphilis of the epididymis, ranging from small nodules to definite enlargements. Balma reports finding thirteen cases out of twenty-three hundred syphilitics, thus showing that the epididymis is rather infrequently affected. The involvement may be interstitial or gummatous in type, and may be unilateral or bilateral, but usually unilateral, and, as before stated, may occur independently of orchitis, or may be an extension of it. The interstitial type may occur at any time, from the early secondary manifestation of syphilis to the fifth year of the disease. McDonaugh makes mention of a case occurring before the secondary rash appeared. The caput major is the part affected, as agreed by most authorities, although it may affect the entire epididymis. McDonaugh describes this condition as like "palpating a bunch of grapes though a soft bag." Occasionally more or less hydrocele may develop. The interstitial type may manifest itself in two forms, one in which pain is out of all proportion to the amount of swelling, the pain being intense with great tenderness on pressure. The other type is more gradual in development, with little pain except a dull aching sensation in the scrotum and inguinal canal, and little or no tenderness on pressure. Gummata of the epididymis occur later in the course of syphilis. Unlike the interstitial form, the caput minor or body is

the part affected. Klauder reports a case occurring as late as fifteen years after infection. The lesions are usually multiple, and rarely bilateral, ranging in size from a pea to a hazel-nut. (Thompson). At times these may break down and form a discharging sinus. Gummata are of slow development and painless. On palpation one or more tumor masses varying in size with smooth surface can be felt. Differential diagnosis must be made from gonorrheal, tubercular, traumatic and pyogenic epididymitis, tumors, etc., which at time is difficult and requires both clinical and laboratory tests, such as the Wassermann reaction, etc.

Syphilis of the pancreas is considered as a rare condition, although Warthin states that in thirty-nine cases of old, latent syphilis the pancreas showed a greater or lesser degree of atrophy and interstitial fibrosis,—none of them normal. The tail and body are more frequently involved than the head of the pancreas, except in a few cases, where the entire body was practically affected. Treponema found in one case. Perhaps syphilitic pancreatitis also exists more often than is clinically diagnosed. The chief symptoms, according to Thompson, are: epigastric pain, tenderness, fatty diarrhea, cachexia, and glycosuria. In cases of gummata, jaundice and edema of the lower extremities are noted. The diagnosis must rest on the symptoms, the history of syphilis, and laboratory findings. But few cases have been recorded as diagnosed clinically. McDonaugh, in his text book, reports a case in a young physician with a positive Wassermann reaction that subsided under treatment. Numerous cases of syphilitic lesions of the pancreas in congenital syphilis have been recorded. Warthin describes the pathological findings as: as interacini and interlobular fibrosis, with replacement of the islands of Langerhans through fibrosis; atrophy with compensatory hypertrophy, regenerative new formation of the acini, and infiltration of lymphocytes and plasma cells.

That syphilitic invasion of the liver does exist, is accepted by all or most authorities, although the frequency which which it occurs is a matter of discussion. No doubt it is more frequent than is diagnosed, as many cases run a symptomless course and are diagnosed only after death. It is perhaps more frequent among the Negroes than other races. McNeil reports that out of twelve hundred syphilitics, liver involvements were diagnosed clinically in sixty-four cases, and out of one thousand autopsies on all classes of patients 90 per cent showed definite cirrhotic changes in the liver. Three hundred of these cases

were positive syphilitics, as shown by autopsy findings, 30 per cent of which showed syphilitic changes of the liver. Syphilis of the liver may occur in both the congenital and acquired forms. In congenital syphilis it is a rather common occurrence. Hofmeister states that 39 per cent show syphilitic involvement, and Feige claims 65 per cent in congenital syphilis. Syphilis of the liver may occur as acute yellow atrophy, cirrhosis, gummata, and perihepatitis. Warthin describes the pathology as: chronic passive congestion, atrophy, gummata, atrophic cirrhosis, intralobular cirrhosis, and Glissonian cirrhosis. The inflammatory lesions varied from slight plasma cell infiltration of the periportal tissue to the most marked cirrhotic changes. The early syphilitic lesions perhaps are colangitis and acute yellow atrophy. In syphilis of the liver, the most common symptoms are pain, vomiting, intermittent fever, spitting of blood, hemoglobinuria, ascites, and icterus. Cirrhosis, gummata and perihepatitis are, as a rule, late manifestations of syphilis. In cirrhosis and gummata, the liver may be enormous in size and easily be palpated as a large, nodular tumor mass of liver tissue. Syphilitic cirrhosis and gummata under vigorous treatment will recover, while acute yellow atrophy is always considered at fatal. The diagnosis of these conditions is difficult to make. We must rely on the syphilitic history and the Wassermann reaction, and, as before stated, many cases are not diagnosed until after death.

Syphilis of the salivary glands: Little can be said on this phase of the subject. It no doubt is a rare condition. Perhaps no more than five cases have been reported that are recorded.

In conclusion it may be well to say that glandular invasion in syphilis is rather infrequent, except the lymphatics and testes. Although, as stated before, in glandular structures such as the liver, pancreas, etc., it may occur more often than diagnosed, as usually the diagnosis is not made until after death.

Local Value of Optic Nystagmus.—Observations made by Fox and Holmes tend to support Stenvers' hypothesis that reflex centers for optic nystagmus lie in the occipital lobe and in the second frontal convolution, and that these are connected by a reflex path which runs through the white matter of the hemisphere. Nystagmus to the opposite side is affected when a lesion lies in the supramarginal or angular gyrus, in the adjacent portion of the parietal and temporal lobes, in the posterior end of the second frontal convolution, or along a line joining this with the angular gyrus.

TREATMENT OF SYPHILIS*

By C. BROOKS WILLMOTT, Louisville.

The treatment of syphilis is a very large subject. Instead of having to talk on the treatment I had hoped to discuss the papers that have been read.

I should say that in the treatment of syphilis one of the principal things to be considered would be the choice of the drug in the treatment of the individual case rather than the syphilis as a whole. As you all know in the early stages of syphilis the preponderance of opinion at the present time seems to favor the early administration of arsphenamin, while in later stages and probably in cases where the diagnosis has not been made until syphilis has existed for a number of years, the patient presenting vague clinical symptoms with possibly, a two, three or four plus Wassermann reaction, it is unquestionably in my mind at the present time whether the administration of arsphenamin is just the proper thing. In these cases my experience in the clinic at the hospital rather favors the administration of the iodides and mercury. In cases of this kind that is in syphilis of the nervous system, especially in tabes, I believe, as mentioned by one of the essayists, that arsphenamin is indicated especially in locomotor ataxia. In cases of paresis I do not believe it is ever indicated. As a matter of fact I have seen some very disastrous results. I recently had some correspondence with the clinical direction of the state hospital at Central Islip, Long Island, N. Y., where Dr. Fordyce, who has recently died, treated quite a number of cases of paresis in that institution with practically no results so far as improvement was concerned.

To come back to the choice of drugs: I do not believe that during the administration of any drug, if the patient is not doing well, perhaps not showing a gain in weight, and feeling better, that it is wise to continue the administration of that particular drug. Often we find that arsphenamin causes a loss in weight. I think in that case we should administer the iodides or mercury, or vice versa.

In discussing the treatment of syphilis as mentioned in Dr. Jefferson's paper, I agree with him in practically everything he said. In our clinic we find a great many cases in adults that have not been diagnosed, or the diagnosis has probably been made in one of the other clinics, or perhaps following a recent operation the proper diagnosis has been

*Presented in Symposium on Syphilis, before the Jefferson County Medical Society.

made from the serological findings, with a Wassermann reaction of three or four plus. In those cases where we have no active secondary or tertiary lesions we have decided that the administration of arsphenamin is not advisable especially if the patient is over 50 years of age. If there has been no specific blood analysis and if the patient presents symptoms of neurosyphilis, especially involvement of the brain, we have decided that the administration of arsphenamin will only aggravate the disease and cause rapid progression of symptoms. In those cases we usually administer iodide and mercury.

As to the administration of iodide: It is indicated principally, I think, in the late stages of syphilis, the so-called tertiary stages, and of the three drugs—arsphenamin, mercury and iodide—it can safely be pushed further than the other two.

As to the choice of method in the administration of mercury: I think this should be left to the most satisfactory results and experience one has had in treatment in these cases. There is no doubt but the inunction treatment is as good as anything else. The reason I do not use it myself is because I do not like to do it myself and I cannot trust my patients to have it done, and of course some patients object to this method for certain reasons. When I give mercury intramuscularly I know they are getting it and just how much.

DISCUSSION

Jethra Hancock: Syphilis is such a tremendously large subject that we are more or less confused in trying to discuss it, especially in view of the scope we have undertaken to cover this evening. I wish the discussion could be more centralized as in that way we could have gotten more benefit from it. The papers read by Dr. Jefferson and Dr. Eddleman were excellent and both were intended for study rather than discussion so far as I can see. I wish I had both of them to read, and shall look forward with interest to seeing them in the Kentucky Medical Journal.

The important thing in my opinion is to institute the proper treatment of syphilis before it reaches the stages mentioned by the essayists. Treatment of the late stages of syphilis, such as paresis and locomotor ataxia, is too discouraging for anyone to become very enthusiastic about. Treatment of glandular syphilis is not so discouraging and we can approach it with greater enthusiasm. The most important feature, however, is to treat syphilis early, and I wish we might have presented before this society a symposium on the early scientific diagnosis and treatment of syphilis. Probably more brain matter is being expended on this subject now than any other in medicine unless it be cancer and I believe we

are gradually getting somewhere.

There are a number of clinics with which I have something to do throughout the state, and it has been very encouraging to note the results with some of the newer remedies that have been tried.

I have been impressed with the fact that the majority of observers still speak of the importance of administering a certain number of courses in the treatment of syphilis extended over a certain period of time. We must remember that no two cases of syphilis are exactly alike, nor do I believe that all cases should be treated the same. I can readily understand, of course, that the physician should use the method with which he is most familiar and which he has found most effective in his experience, but there seems no good reason to speak of a certain number of courses of treatment. For instance, one observer specifies six doses of arsphenamine and twelve doses of mercury as a course with six weeks intervals, etc. Another man adopts this method and thinks he is certainly right. Much depends upon the stage of syphilis when treatment is instituted as to the remedies to be employed and the period over which medication is to be extended.

The most important feature, in my opinion, is that we make the diagnosis of syphilis in the pre-Wassermann stage, before the Wassermann reaction has become positive, and if we will do this we can offer the patient much more toward a cure, or we might actually say, that a cure could be effected, by the intelligent administration of remedies now at our command. If the patient is seen and the diagnosis made in the pre-Wassermann stage, and if he is adequately treated over a sufficient period of time, I dare say we will see few cases of neurosyphilis and a minimum number of recurrences. In most cases if the Wassermann reaction does not become positive within the first three weeks of treatment, it will not become positive at all. I am convinced of this from the actual observance of patients treated and therefore feel rather confident about it.

Another point I would like to make: When is neurosyphilis to be expected? Is it a late or an early manifestation of syphilis? I am firmly of the opinion that it is an early manifestation. I am disposed to believe that the nervous system is invaded within the first few months after infection has occurred. If the cerebrospinal fluid be tested during that time ample confirmation of this fact will be found. At the same time I wish to express the positive belief that the central nervous system is more resistant to syphilitic infection. It will bear more infection and toxins of syphilis than any other tissue of the body; moreover, that many patients with syphilis of the nervous system do not have paresis or locomotor ataxia;

these are the causes where nature produces spontaneous cures.

In the treatment of early syphilis arsphenamine is an excellent remedy. It will cause lesions to disappear and sterilize the patient if administered before the Wassermann reaction becomes positive. After the Wassermann reaction is positive we have quite a different proposition to handle. We then depend less upon arsphenamine to effect a cure of the disease, but it does have a place even in this stage. However, arsphenamine has no place in the very late manifestations of syphilis even though the Wassermann reaction be four plus positive. The administration of arsphenamine in such cases may be positively harmful. I have in mind one case in which arsphenamin was given against my advice with disastrous results. The patient was a man whose legs had been amputated after a railroad accident; he had contracted syphilis many years previously which had resulted in faulty union of his fractures, hence the amputation. At this time, twenty years later, he was apparently in perfect health. The attending physician insisted upon a Wasserman test which was found four plus positive he also insisted upon treating the patient with arsphenamin. In doing this he "aroused a sleeping dog." The patient was made distinctly worse, he lost weight, lost his appetite, and developed some serious dermal lesions. That man should not have been given arsphenamine, he was living in harmony with his syphilis prior to the administration of this drug. If the physician had given him inunctions of mercury no harm would have been done even if no good has been accomplished. Arsphenamine may work wonders in vitro, but mercury and the bismuth preparations do it in vivo! For that reason I think in the later manifestations of syphilis we should rely upon mercury by inunction, which is probably the best method of administration or use iodide of potassium and mercury in the old-fashioned way.

A. D. Willmoth: I think the question of syphilis is always an interesting one to any surgeon for two reasons: first the direct bearing which syphilis has on the case that may come under observation for surgical treatment in which operative procedures are clearly indicated; second, but by no means least in importance, that class of patients who present symptoms that are apparently surgical, yet are not surgical—they never are and never will be—they are apparently the result of referred pains in the abdominal cavity and are thus misleading. I am sure that in the earlier days of my practice on several occasions I opened the abdomen of patients suffering from syphilis. These cases were never surgical at any time, and I simply made a mistake. We recognize the fact that syphilis may invade practically every organ and tissue of the body. Among the internal organs it is particularly

prone to attack the liver, spleen and stomach.

It is interesting to note that in recent studies of this subject no one has ever indicated that the gall bladder might be involved in cases of syphilis. It seems that the gall bladder, although the liver is frequently involved, has escaped invasion by the spirochaetes and no syphilitic lesions have been produced there. It is always well to bear syphilis in mind when trying to make a differential diagnosis of an apparently acute abdominal condition. I know of nothing that is more confusion for the time being that the intestinal crises or the so-called tabetic or syphilitic pains in the abdomen. They are easily mistaken for disease of the liver, gall bladder, appendix, or possibly ulcers about the stomach or duodenum. It is no easy task to make the differentiation in many of these cases between syphilis and some of the acute lesions that demand surgical intervention for their relief.

Again, syphilis is responsible for certain conditions which are primarily and essentially surgical in their significance. One of these is the so-called "diabetic" gangrene of the foot. I am sure many of these cases are not the result of toxic conditions, but are the result of direct infection of the blood vessel walls by spirochaetes, thus producing necrosis of tissue by obstructing the local blood supply to the adjacent parts. This obstruction may be temporary or permanent and local gangrene may be the logical result. Syphilis is oftentimes responsible for this condition.

The uterus is another organ that is not infrequently attacked by syphilis. Not all cases of menorrhagia or metrorrhagia are due to uterine myofibroma or beginning carcinoma, neither are they due to some reflex condition within the uterus itself, they are symptomatic manifestations due to syphilitic invasion of the uterine mucosa and submucosa. Unless we take these facts into consideration we are likely to be far from correct in our methods of dealing with such cases. Without careful study of the individual patient presenting uterine symptoms we are apt to overlook many cases of syphilitic involvement of the uterus.

Syphilis is no respecter of tissues, every organ and structure of the body may be attacked, including the muscles. I have under observation now a patient with tumor of the sternocleidomastoid muscle which is syphilitic in origin. I have seen a number of cases of this kind, and they were all syphilitic. Unless we take this into consideration we are prone to make an incision over the tumor under the impression that it is glandular enlargement or simple lipod tumor, whereas it is nothing but a manifestation of syphilis. A beautiful description of this condition was given many years ago and the statement made that these enlargements are always

syphilis and never anything else, and we should not operate upon them with the idea that they are malignant.

The presence of syphilis has an important bearing upon safety of surgical procedures and the operative risk. I am sure the presence of syphilis has much to do with the operative risk, and the surgeon is often asked to make a positive statement as to what the outcome is going to be. For that reason we must take into consideration syphilitic involvement of the tissues of the patient's body when we decide upon operative procedures for the relief of pathology which may be present. In syphilis there is always more or less involvement of the entire system and the patient is not as good an operative risk as he might have been otherwise. The heart, liver and other organs may be seriously involved in syphilis, also there may be vascular and circulatory disturbances which interfere with vital processes. Even in primary and secondary cases syphilitic infection may interfere with the healing of wounds of bones and soft tissues. We have long been familiar with the fact that syphilis may cause non-union fractures and other wounds of bone, but not until more recently have we considered syphilis as a factor in the non-union of operative wounds of the soft structures. Thus we may operate for appendicitis or other abdominal lesions, the abdominal wound apparently heals, when the stitches are removed on the tenth or twelfth day we find the wound is merely stuck together with fibrinous exudate, the edges separate freely, and there is no tendency toward healing. Such cases are always syphilitic, and the wound heals readily following antisyphilitic treatment. This fact must be taken into consideration when estimating the operative risk and the ultimate result in dealing with all types of lesions requiring surgical intervention for their relief in patients with syphilis. Some of you may recall a patient exhibited before this society about a year ago upon whom celiotomy had been performed with non-union of the abdominal wound after nearly two weeks. When the stitches were removed the wound was found gaping, there was no semblance of healing, merely an agglutination of the edges. It was proven that the patient was a syphilitic, and following antisyphilitic treatment the wound healed perfectly. Thus it will be seen that the question of syphilis has a direct bearing upon the ultimate outcome in certain cases where surgery is advised.

Nothing has been said in regard to the surgical risk in syphilitic involvement of the vascular system, the brain, the aorta, etc. One speaker mentioned syphilis of the thyroid and pituitary gland. Such cases must be quite rare. When the brain or vascular system, including the great vessels, is involved the surgical risk is markedly increased. These cases should be carefully stud-

ied before any operative work is undertaken, and except in emergency cases surgery should be postponed until the condition of the patient has been improved by adequate antisyphilitic medication. In my judgment operative intervention should not be undertaken upon patients in the primary or secondary stages of syphilis excepting in cases where surgery is urgently demanded and delay would be dangerous. In other words, wherever possible surgery in syphilitics should be elective and be undertaken after the dangers to which attention is been called have been eliminated by the institution of antiluetic treatment. Of course emergency operations must be performed when necessary regardless of the presence of syphilis.

There is one question in regard to the treatment of syphilis upon which I would like to be enlightened: I wish someone who treats this disease would tell us the frequency with which the liver involvement is increased following the administration of the arsenical preparations. I was recently called in consultation to see a woman who presented what was apparently an acute cholecystitis. She had slight jaundice and some elevation of temperature. She promptly lapsed into an unconscious state and died within thirty-six hours. The history was that two weeks previously she had been given an intravenous dose of something—whether it was neoarsphenamine or arsphenamine I do not know. The patient herself did not know what she had been given, neither did the family physician, and nothing further could be developed from the history. The sister called attention to the fact that some preparation had been administered intravenously when the family physician and myself were discussing the case. The patient was removed to the hospital immediately, but died within thirty-six hours apparently from a toxic liver with jaundice which rapidly deepened.

I would like to know the frequency with which the liver is attacked by the arsenical preparations, and if there are any differences in these preparations as to the frequency with which they attack the liver after intravenous or other methods of administration.

Robert L. Kelly: The previous speakers have said nothing about the use of bismuth in the treatment of syphilis. This method was brought prominently before the profession by Levaditi in 1921-1922. Prior to that time, however, the drug had been used experimentally by Santon and Robert. Balzer in 1889 made some extensive experiments on dogs and rabbits by intravenous injections of bismuth, but had severe untoward reactions and the method was abandoned. Sazerac and Levaditi (1921-1922) made further experiments with animals using intramuscular injections of different preparations of bismuth—principally sodium and potassium tetrobismuthate—and also in human beings in clinics,

and found that this drug had marked therapeutic value. Since that time several American observers have been using bismuth, both experimentally and clinically, and its therapeutic value has been thoroughly demonstrated. In the scale of efficiency arsphenamin is classed at 10, bismuth 7, mercury at 3. Bismuth is given with good effect in the primary and early secondary stages of syphilis, causing disappearance of mucous patches and other characteristic symptoms, after a total amount of .3 to 1.5 gram has been administered. It has also been shown to be of value in the later stages of the disease. The Wassermann reaction is reversed in the majority of cases when 2 to 3 grams have been given. The rule is to give 0.1 to 0.2 gram every four days or a week. The toxic effects produced by this drug are about the same as from mercury, but there is no salivation. When the patient begins to show foul breath and gingival blue lines it is a sign to discontinue the treatment temporarily to avoid ulceration of the buccal musosa.

Curran Pope: In the treatment of any infection that involves every tissue and structure of the human body, we should be guided by basic principles. I will try and enunciate one; **the body cures itself**; we do not cure syphilis with any of the so-called antisyphilitic drugs. These remedies, among a number of other things I am going to mention, merely possess the power of stimulating the processes of the body to cure itself. There are patients who go all through life with positive Wassermann reactions and yet present no clinical symptoms.

The time for the treatment of nervous syphilis is in the primary stages; but there will be found many cases that, no matter what may be done, are going to have nervous syphilis because they have nervous systems that not only cannot resist syphilis but cannot resist many other infections likewise. There are any number of individuals whose nervous systems are affected by typhoid fever and other diseases. We must not think of syphilis alone, but must think of the kind of tissue, its structure, the peculiar and personal reactions of the individual.

As to the early infection of syphilis: Is its symptoms due altogether to one kind of spirocheate? Might it not also be due to a peculiar neurotrophic spirocheate acting upon a nervous system that is already prepared and sensitized by its own weaknesses to syphilis? The location of tabes and paresis is oftentimes not determined by early infection nor by the neurotrophic spirocheate, but my motor activity. Dr. C. F. Russell of Toronto, has shown, from many careful clinical observations that the involvement of upper tabes result from over-motor stimulation of the upper cord, just like lower tabes, may result from over-stimulation of neurons lower in the cord. It must not be forgotten that oftentimes paresis is the result of a combination of

conditions, as well as the specific infection. The truth of the busines is that tabes and paresis fortunately develop in but a very small percentage of those who are affected by syphilis; this is indeed a blessing.

I would like to emphasize the fact that doctors must never forget that the treatment of syphilis does not consist solely in the administration of antisyphilitic remedies. Syphilis should never be treated. I want to repeat that **SYPHILIS SHOULD NEVER BE TREATED**, but the patient should be handled. Antisyphilitic treatment may be found in diet, in exercise, in fresh air and in that most powerful antisyphilitic remedy hydrotherapy. Many cases that will not react to antispecific medication alone will react to antispecific medication with the proper use of these adjuncts.

A negative Wassermann reaction in a case about which one knows nothing should mean nothing in my humble opinion. I think a negative Wassermann is of value only after a known positive Wasserman reaction. I could cite case after case in which the spinal fluid and the blood were both negative, and yet the patients were plainly syphilitic. As I have once or twice before remarked, I am now one of the older practitioners of medicine, my experience dates from long before the Wassermann test was devised. I have not been carried away by the Wassermann, nor by arsphenamin, nor by any particular method of medication. I believe that there is a wide field of real diagnosis of syphilis which embraces what one can see, touch and test. In other words, what can be determined by diagnostic abilities outside of the Wasserman reaction. I will venture the assertion that there are few cases in which the expert examiner cannot find some sign of syphilis. I had in my office today a young woman with syphilis whom nothing has helped. Her spinal fluid and blood Wassermann reactions are negative. She is in a wretched nervous condition, miserable. I made the diagnosis of inherited syphilis based on the bone conditions, especially the tibial deformity and scaphoid scapulea. I believe she will eventually get well.

It is the little features that oftentimes show the way the wind is blowing. I frequently wonder why it is that so few men remember one of the most distinctive symptoms of syphilis, the condition of the aorta. I have in preparation now a paper on what I am pleased to call "Aortoasthenia" that I expect to read the early part of next year, representing some observations of mine extending over a decade, in which I am satisfied there was intermittent dilation of the aorta, or aortic asthenia, which is a not infrequent accompaniment of specific disease as well as permanent asthma and aortic aneurysm. Nor should we overlook the myocardial or heart muscle weakness; in the milder forms I am pleas-

ed to call this condition "cardi-myasthenia" with syphilis very frequently the underlying cause. When we can exclude gall bladder disease, it is very suggestive symptom, a diagnostic factor possibly in syphilis.

I am one of those who believes that it is a rather risky thing to give a patient an anesthetic who has any specific symptoms, either minor or major, referable to the brain. I am afraid of it and always prepare the family by telling them of the risk and the danger, and as Dr. Willmoth has said unless it is an emergency case operation should not be performed, and then if it is performed it should if possible be done under local and not under general anesthesia.

This is a tremendous subject. Syphilis to the human being is a great deal like what Bob Ingersoll said of Shakespeare, an intellectual ocean, touching every shore of thought and so it is that syphilis touches every organ and every function. I believe it was the late lamented Osler who once stated: "He that knows syphilis well, knows clinical medicine well."

Robert L. Kelley: Kolmer and Luke did considerable experimental work on rats by administering lethal doses of arsphenamin and neoarsphenamin. The arsenic content of each drug that both series received was closely similar. After death of the animals the liver and kidneys were examined. It was found that arsphenamin caused degeneration and necrosis of the liver, and the degeneration was so marked in a few of the rats that it closely resembled acute yellow atrophy. While arsphenamin had some degenerative effect on the kidney, there was no necrosis. Neoarsphenamin caused degeneration and necrosis of the kidney structure, while in the liver it caused some cytoplasmic swelling but no necrosis.

These experiments suggest that if there is any suspicion of liver disease, neoarsphenamin should be administered; if the kidneys are involved, arsphenamin should be selected.

Chas. W. Jefferson: I have seen two patients with intense jaundice during syphilis where arsphenamin was not used in the treatment. I have come to the conclusion that certain syphilitics develop jaundice anyway regardless of the method of treatment employed. I have under observation now a man with acute jaundice which is probably syphilitic in origin. I do not believe the administration of arsphenamin has anything to do with the development of jaundice in these cases.

Edward R. Palmer: I believe those of you who have been in the practice of medicine as long as I have will agree with me when I say that syphilis, as we see it today is distinctly different from what it was thirty years ago. In those days it was common to see marked skin lesions, papular, pustular, rupial, serpiginous, etc.; it was common to see not only mucous patches but ul-

cers of the throat, the larynx, pharynx, destruction of the hard and soft palate; anal and vaginal condyromata; destruction of the vomer; saddle-nose, and other lesions that were then characteristics of the disease.

It has been said by some observers that syphilis is becoming milder. I do not believe that. It is becoming milder in one respect, from the fact that we do not see these old, horrible lesions that gave the disease its awful name. It is claimed that syphilis is getting milder, and that this is due to the gradual syphilization of the race. That is absolutely wrong also. There is no such thing as syphilization of the race. There is no such thing as the disease being acquired by the process known as heredity. For the race to be syphilized, every living person would have to contract the disease by direct infection. So the disease is not getting milder, nor are we becoming gradually syphilized. The disease has, however, changed in character. Nowadays the syphilis we see mostly is the type described in this symposium, and the chairman of the program committee must have recognized this, that is that the more or less common manifestations of thirty years ago are now seldom encountered, and other types of the disease will be seen more and more frequently in the future.—I refer to syphilis of the central nervous system, the glandular system, and another type not mentioned particular by the essayists, syphilis of the vascular system. These are the types of syphilis we are seeing today. You may wonder why this long peroration, what am I driving at? I am going back to my old-time hobby!

Why has syphilis changed? Is the race any different? No. Has there been any change in the spirocheate itself? Has it undergone any variations in its type? Is there any such thing as a neurotrophic spirocheate? If there is a neurotrophic spirocheate, why should there not be cardiotrophic and renotropic spirocheates? I do not believe that either. I do not believe there has been any change in the soil, and I do not believe there has been any change in the germ. What has changed? There has been a change in the method of treatment, and in this change in the method of treatment, although you have gotten rid of the repulsive external lesions of the disease, you have done so at the expense of the internal organs. This statement of mine is borne out by the findings of an eminent pathologist who has been quoted a number of times in this symposium, viz: Warthin. He made a careful anatomico-pathologic analysis of a large number of cases where patients had died during the various stages and conditions of syphilis; some had not been treated, some had been treated by half-way methods, some had received the most up-to-date scientific treatment known. In each and every one of these cases, even in

those that had received the most through scientific treatment known today, he found unmistakable evidences of syphilis in practically all of the internal organs. From these findings he makes the statement that he has become extremely pessimistic concerning the curative effect of any of the modern methods of treating syphilis, it being his belief that the only effect this treatment has is to render the disease latent. This statement, made by a competent pathologist, confirms the opinion I have always held concerning the modern methods of treatment. They are based upon the misconception that syphilis could be cured by the direct germicidal action of one particular drug. I am still firmly convinced that there is no such drug, and that syphilis cannot be cured within a short time as claimed by the advocates of the newer methods of treatment. Some observers have gone a step further and claimed that certain drugs will prevent these invasions of the internal organs, particularly the central nervous system. This, I believe, is utterly untrue.

What cures syphilis? Dr. Pope struck the keynote in his discussion. Mercury, arsphenamin, sulpharsphenamin, bismuth,—none of these drugs will cure syphilis. These drugs do not act in the body as spirocheteicides, they do not kill the spirochetes, they cannot be introduced into the body in sufficient concentration to act in that way. Syphilis is cured first, last and all the time by the mechanism of the body itself, our drugs or other means employed simply aid this mechanism in the cure of the disease.

I wish just here to pay my respects to my friend Dr. Jefferson and his pet hobby, i. e., salvarsanized serum and intraspinal administration: I cannot for the life of me see where there is any basis anatomically, physiologically or physically, for this treatment. The reason they say salvarsanized serum should be given by the intraspinal method is because the choroid plexus is impervious to salvarsan, consequently there will be no effect in the spinal canal or in the cerebrospinal fluid. Why is it necessary for the drug to get into this fluid? Is that the way the brain gets its nourishment, through the spinal fluid? I do not believe so. If that is the way the brain gets its nourishment, then what in the world is the purpose of the circle of Willis? What is the purpose of the anterior, middle and posterior cerebral arteries? Do they not carry nourishment to the brain substance? If they carry nourishment to the brain substance, is not the best way to get medication into these structures through the same channels? Can you not imagine that medicine introduced intravenously would have better chance of reaching the brain than when given intraspinaly? The cerebrospinal fluid, physically and physiologically, is nothing but a bumper or fluid cushion which acts as a protection to the central nervous sys-

tem, to maintain normal pressure, to prevent shocks, etc. It has no other function. The brain receives its nourishment through the blood vessels and lymph spaces, just like any other tissue does, and the proper way to get medication to the brain would be either intravenously, or through the stomach, or in any other way in which medicine would be taken into the general circulation. It would be just as logical to treat heart disease by injecting medicine into the pericardial sac as to treat brain disease by injections in the spinal fluid.

The man who is always in opposition has to be on the watch all the time in order to find arguments to help him along in his fight. In the November 14th, 1925, issue of the Journal of the American Medical Association, there is an article excerpted from the Archives of Neurology and Psychiatry concerning the source of the cerebrospinal fluid. This explains why the choroid plexus is impervious to arsphenamin or any other drug, and why such medication cannot reach the brain when introduced intraspinaly. There are two theories as to the source of the cerebrospinal fluid. The first is the secretion theory of the cerebrospinal fluid which holds that this body fluid is largely elaborated by the choroid plexus. The second is the excretion or absorption theory which holds that the fluid comes from the tissue fluids of the brain itself. The secretion theory is mainly based on experimental and anatomic data, which may equally well be explained by the excretion theory. The latter renders understandable the changes in the subarchnoid spaces and choroid plexus in various lesions of the brain or cord. As the secretion theory does not explain the relationship between the brain and subarchnoid changes, Hassin says, it must be assumed that the cerebrospinal fluid is produced by the brain tissues themselves the villi of the choroid, like those of the arachnoid, being organs, not of secretion, but of excretion or absorption of the waste from the spinal fluid. In other words, the choroid plexus does not secrete the cerebrospinal fluid. These little villi protruding into this fluid are simply solely for the purpose of filtering out the waste products and have nothing whatever to do with the formation of the spinal fluid. So, as I have already stated, I cannot see any logical reason for intraspinal treatment, as certainly no medicine introduced into the spinal canal can possibly reach the brain tissues. The only method by which drugs can reach the brain is through the general circulation. The whole idea of intraspinal medication, based upon experimental data, is that drugs so introduced act directly upon the spirochetes; but there are no spirochetes in the cerebrospinal fluid, they are in the brain tissue or in the spinal cord, and it would be a

round-about-way to try to reach them through the cerebrospinal fluid.

Chas. W. Jefferson (in closing): While I have the highest regard for the opinions of Dr. Palmer I must disagree with what he says about intraspinal medication in late stages of syphilis. In the majority of these cases the Wassermann reaction on the cerebrospinal fluid shows four plus positive, and after one or more intraspinal injections of salvaranized serum the fluid becomes normal in reaction.

In my experience the clinical results amply testify to the value of the Swift-Ellis method of treatment. I have treated many patients with beginning tabo-paresis by this method with astonishingly good results. I do not mean to say that these individuals are completely well, but they have improved in every way to a marked degree, and have been able to resume their former occupations. Many of them were practically incapacitated prior to treatment, their lives were miserable because of their inability to navigate and because of their mental disturbances,—they are now walking with less difficulty, they are mentally clear, and are comfortable. When such results can be accomplished by intraspinal medication I can see no reason to argue against this method of treatment.

Significance of Blood Cultures.—A total of 2,092 recorded blood cultures, taken during two years, was studied by Lawson, and the final end-results are tabulated. Altogether, 221 positive blood cultures were obtained. The proportion of deaths from all cases of septicemia to total positive blood cultures was 62.2 per cent. The proportion of known deaths from septicemia to total blood cultures taken was 6.54 per cent. The diseases with positive blood cultures totaled twenty-eight, or 26.6 per cent of the total number of conditions for which they were taken. The organisms isolated include the usual pathogenic ones, the majority of positive cultures being composed of pneumococci, *Staphylococcus aureus*, *B. typhosus*, *Streptococcus hemolyticus* and *Streptococcus viridans*. The percentage of deaths in relation to total positive cultures for each organism from 100 per cent with gonococci, *Staphylococcus* and streptococci, to 61.9 per cent for *Streptococcus hemolyticus*, 50 per cent for meningococci, and 28.9 per cent for *B. typhosus*. The average percentage of deaths in relation to total cultures for all organisms was 72.2 per cent. The majority of deaths occurred on the same day or within four days after the first blood culture was taken.

SYMPOSIUM ON ARTERIAL HYPERTENSION

ARTERIAL HYPERTENSION: CASE REPORT*

By J. ROWAN MORRISON, Louisville.

I first saw Mr. S, a merchant, aged 55, on November 2, 1922. The history obtained was that on the night before at midnight he had a stroke of paralysis involving the right side. When I saw him he was perfectly conscious and showed some signs of recovery, in the eight hours from his first shock until the time I examined him. He was a short, fat man, weight at that time 215 lbs. His family history was practically negative. Personal history was that he had had usual childhood diseases, but no scarlet fever or diphtheria; had typhoid a number of years previously and had suffered from gall bladder infection, and gall stones for a number of years prior to 1903, when he had a gall bladder operation; teeth in good condition; tonsils not diseased. He is a successful business man and a very hard worker, paying a great deal of attention to details. A nervous type and giving little thought to rest or vacation. A heavy eater with special preference for meat and sweets. Had no hobby but his work.

At the time of examination, blood pressure was 220-130 with rapid, full pulse. Face flushed and presenting typical symptoms of cerebral hemorrhage. He was at this time exceedingly emotional. He was kept perfectly quiet, ice caps were applied, and he was given a laxative, bromide and iodide of soda and very light diet. He began to improve quickly showing that his hemorrhage had not involved a vital point. Examination of his urine showed albumin, casts, reduced specific gravity; blood chemistry, later, showed modern retention of non-protein nitrogen. P. S. P. two hours was 50. Heart was moderately enlarged showing no particular disease, only enlargement from hypertension.

Mr. S. continued to improve and after three months, was up and about, with very little involvement from the cerebral hemorrhage. His blood pressure was usually between 195-100 to 180-95. His weight averaged about 210 lbs at this time although he had made a considerable reduction in diet. He was advised to return to his work very slowly, to develop a hobby of some form consisting of light exercise each day in the open air.

*Read before the Jefferson County Medical Society, October 5, 1925.

He chose golf which he had played occasionally before his stroke, and which he now played with a less degree of accuracy and much less strenuously but with a great deal of pleasure.

By cutting down the anxieties of his work, by teaching him to take it much less seriously, by continuing a low protein, low salt, somewhat diminished diet, he gradually lost weight and his blood pressure gradually declined as shown by my notes, for early in 1923 after 2 months' visit in Florida; blood pressure 161-90; weight 198; sleeping well, happy and continuous exercise of golf. In autumn, 1923, weight 199, blood pressure 180-95. At this time he felt better but had neglected his rest and exercise. Was advised to go slower, to reduce his diet considerably, and as his business was more exacting, he was given luminol 1-2 gr. with sajodin 3 gr. one hour after meals three times a day. I used this with the idea of controlling his nervousness. He was advised to go south for several months' rest. He did with great benefit.

My notes for 1924 show gradual diminishing weight. March, 1924, weight 185 lbs., blood pressure 165-90; feeling well, happy but with a tendency for an occasional extra systole on heart examination. At this time there was considerable gas in the colon and he was advised to take less starchy food and to increase the amount of cultured milk each day. Advised to take purified ox gall. My notes show the next month the extra systole was not found, there was less gas in the colon, and that he felt better.

Notes for January 6, 1925, show his weight to be 180. No evidence of extra systole. Patient better. Advised to take another rest in the south. Notes of June 25, 1925, patient is much better, pulse regular, 76, blood pressure 154-85, less gas, weight 179 1-2. August 18, 1925, feeling very well, no headache, sleeps well, blood pressure 140-80, pulse regular, 76. October 2, 1925, three years from date of stroke, patient 58 years of age. Feels very well. Pulse regular, 80, blood pressure 160-90. Feels a little tired. Has had a week of more strenuous work. Admits that he has been doing too much. Is on the way home for afternoon rest. Bowels move regularly. Takes several times a week small dose of "Dawson Springs water" in glass of hot water before breakfast. This produces one semi-solid movement. Weight 175 lbs.

This is a case of arterial hypertension in a business man 55 years old, with cerebral hemorrhage, with observations over three years. The man admits he feels far better now with a weight of 175 lbs,—being a loss

of 40 lbs. in three years, with a blood pressure averaging between 140 and 160 when under normal conditions, although running much higher than this under excitement,—than he did three years ago. The treatment has consisted largely in training him to become skilled in the use of equanimity; to reduce his diet to a comfortable intake of food, properly balanced. In teaching him to avoid excitement of all kinds and to administer to him such substances as bromides and luminol when he has to take on any added amount of excitement in his work.

This man has improved principally because he has obeyed instructions and has been both willing and able to control an abnormal appetite and to moderate his excitement both from work and play. His hypertension is controlled but not cured, because it takes only a short time of over-work, over-excitement or over-eating to bring it back to a troublesome point.

The longer I live the more I am convinced that Doctor Osler's idea that equanimity is the most valuable treatment we have for arterial hypertension.

CAUSES OF ARTERIAL HYPERTENSION*

By FRITZ C. ASKENSTEAD, Louisville.

For the maintenance of normal arterial pressure a proper balance of the following factors is necessary: (1) Cardiac activity. (2) Volume and viscosity of the blood. (3) Elasticity of the arteries. (4) Vasomotor control.

Physiologically these forces may vary in the extent of their activities, to meet varying demands for blood supply, and a rise or fall of blood pressure will be observed; but such fluctuations serve conservative purposes, and a harmonious interaction between the above factors is maintained. In hypertension this balance is disturbed, sometimes to the extent of affording paradoxical results. For example, physiologically, rapid heart action tends to raise the blood pressure, a slow action to lower it; pathologically, tachycardia tends to lower and bradycardia to raise it. The slow powerful systole of a dilated and hypertrophied left ventricle forcing a large volume of blood into the arterial system, followed by a prolonged diastole with complete ventricular filling, results in an abnormally high systolic tension. This is illustrated by aortic regurgitation or complete heart block. In

*Read before the Jefferson County Medical Society, October 5, 1925.

these cases of dilated and hypertrophied ventricles, with slow pulse, the diastolic tension becomes relatively low, especially in aortic insufficiency, and the pulse pressure is often over 100 mm.

It is self-evident that an increase in the volume of the blood within the arterial system will give rise to an increase of blood pressure, but as this increase of volume must be due either to a greater inflow through the heart or to an increased resistance to the outflow at the peripheral end of the system, only these causative factors need be considered. Theoretically, an increased viscosity of the blood will offer a greater resistance to the outflow through the capillaries, but this factor can play but a minor part in clinical hypertension, and as yet too little is known regarding excessive viscosity to prove of practical value.

Were all the arteries a set of rigid tubes, the systole of the heart would cause an abrupt rise of pressure, proportionate to the cardiac power, and during the diastole the blood pressure would sink to nil. The elasticity of the arteries enables them to accommodate themselves to the overfilling during systole and to exert a steady pressure upon the blood volume throughout the cardiac cycle. Thus, when the arteries have become more or less rigid, a rise in systolic pressure and a lowering of the diastolic will result. This will be observed especially when the arterioles as well as the larger arteries are involved, whereas sclerosis of the aorta is of itself insufficient to give rise to a hypertension, being a constant pathological factor in so-called senile or decreescent arteriosclerosis, which is characterized by a normal or subnormal systolic pressure.

Vasomotor action plays a considerable part in essential hypertension, as evidenced by the very rapid and extensive fluctuations of blood pressure without material change in the pulse rate. In case, previously reported, I observed a fall from 202 mm. to 145 within an hour, with a pulse rate of 66 at both extremes of the fall. So sensitive to psychic influences is this vasomotor control in essential hypertension that the action of the will to impel certain muscular exercises will produce the same rise and curve of blood pressure without the muscular effect as when the movements actually take place Kornfeldt (1). It is now an established fact that during the night, when psychic influences are at a minimum, blood pressure is lowest.

Krogh (2) has demonstrated that the capillaries possess a vasomotor system of their own, independent of that of the arteries, which en-

ables groups of capillaries to open and close as local conditions demand. Moreover, a propulsive action has actually been observed, thus justifying the idea of the "peripheral heart," advanced many years ago. This is easily accepted when we realize the resistance offered by the capillaries, which often are so small that the blood cells become compressed during their passage, yet the difference of the blood pressure of the precapillary arteries and that of the smallest veins is but 4 mm., being reduced from 8 to 4 mm. Under certain pathological conditions, as acute glomerulo-nephritis, the capillaries may become dilated and crowded with blood cells, thereby raising the blood pressure as much as 25-30 mm.

The relation of chronic nephritis to high blood pressure has become a subject of renewed interest and study. The theory first advanced was that of Cohnheim. He regarded high blood pressure as a compensatory effort to overcome the obstruction offered the blood flow by the damaged renal arteries. The well-known fact that in advanced chronic nephritis the patient frequently passes more urine at night, when his blood pressure is lowest, than during the day when it is considerably higher, is an obvious contradiction of Cohnheim's mechanical theory. Studying the blood supply of the kidneys Richards (3) observed that the amount of excretion of the urine is determined not by the degree of general blood pressure, but by the interaction of the afferent and efferent arteries of the kidneys, mutually regulating the blood pressure within the glomeruli.

It was later advanced that high blood pressure was the result of retention within the circulation of harmful substances normally excreted by the kidneys, and acting through the vasomotor system. For experimental evidence Mosler (4) extirpated both kidneys of 13 rabbits, using 12 as control. In 48 hours blood pressure of all the animals was taken. Of the rabbits operated upon 11 showed a rise of blood pressure and 2 a lowered pressure, the averages being a rise from 94 mm. to 102; of the control 9 showed a rise, one a stationary pressure, and 2 lowered pressure, the averages exhibiting a rise from 88.7 to 89.3. These figures have been used as evidence in favor of above theory, but inasmuch as the increase of blood pressure was slight and not obtained in all the animals with their kidneys removed, the rise of tension may have been a result of pain and mental excitation in consequence of the surgical interference.

Baekman (5) extirpated the kidneys of

four cats. Three of these showed no rise of blood pressure, in one a marked rise was recorded. He concluded that "the increase of blood pressure was not necessarily a result of the complete removal of the kidneys."

Intravenous injections into rabbits of normal urinary substances in various concentrations was also resorted to by Baekman (6), which produced a rise of blood pressure of from 10 to 46 mm. This rise, however, lasted usually only a few minutes, and he found that other hypertonic solutions, as 10 cc. of a three per cent sodium chloride solution or a twenty per cent cane sugar solution would also cause a rise of pressure.

These are, we believe, the most important experiments upon animals recorded to date. These results are sometimes adduced to show that the cause of high blood pressure in kidney disease is renal insufficiency, but the clinical fact that most cases of high blood pressure is found in patients with sclerosis of the kidneys running for decades with an adequate 24 hours excretion, goes to prove that the usual cause of hypertension must be sought elsewhere. Likewise, in acute nephritis, according to Volhard (7), hypertension arises at a time when renal insufficiency and N retention are, as yet, out of question.

But while admitting that high blood pressure in renal disease occurs independently of N retention, Volhard and Umber (8) are still of the opinion that a subsequent renal insufficiency will cause an additional rise of tension of moderate degree.

Kylin contends that if N retention causes a rise of blood pressure, then such kidney diseases as renal tuberculosis, pyelonephritis with sclerosis, renal degeneration with sclerosis (the so-called chronic parenchymatous nephritis), and cystic kidney should also exhibit a rise of blood pressure as insufficiency develops. He reports several cases of his own where an excess of non-protein N was found in the blood—in one case as much as 124 mg.—without abnormal blood pressure. Machwitz and Rosenberg (9) report two such cases, Brun (10) five, and Bergstrand (11) one, with several cases on record for future publication.

Vaquez and Ambard (12), and at one time Volhard, ascribed hypertension to an increase of adrenalin in the blood. Wiesel and Schur (13) believed that they had detected this excess by their research. Huehle (14), however, working in Volhard's clinic, came to the conclusion, after most thorough research, that hyperadrenemia did not occur in hypertension, and since that time this view has been gaining ground.

More recently Volhard has advocated a newer theory regarding the etiology of high blood pressure—the so-called reflex theory. He argues that the cause of hypertension is a diffuse vasomotor spasm provoked by an irritation of the nerves at peripheral blood vessels of the kidneys. That this irritation necessarily originates in the kidneys is vigorously protested by v. Monakow (15) and Kylin. Mosenthal, Mosecowitz (16), Wallgren (17), and others have met with cases of chronic hypertension where post-mortem examinations disclosed no lesion of the kidneys. The question of the role of the kidneys in essential hypertension is therefore not finally settled, but that there exists a connection with this high blood pressure and a hypersensitiveness of the vasomotor system, which causes it to react abnormally to normal impulses, is now generally acknowledged.

This hypersensitiveness is held by some writers to be a result of some endocrine disturbance other than hyperadrenemia, but satisfactory evidence, clinical or experimental is still lacking.

Passing from a general consideration of the production of high blood pressure to specific causes, we may mention lead poisoning, syphilis, gout, cerebral compression, psychic disturbances, tobacco, adrenalin, ergot, barium chloride, histamin, excessive protein food,—a very heterogeneous group of agents, but as we are still ignorant of their *modus operandi*, their relation to arterial hypertension is still a matter of conjecture. As clinicians we can do no better, at the present time, than to regard all toxic agents and all functional excesses as possible causes, and to instruct our patients accordingly.

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THE CONSEQUENCES OF ARTERIAL HYPERTENSION*

By W. H. EMRICH, Louisville.

When a patient enters your office there are but two conditions that can possibly be the cause of his troubles; either the immediate or the remote effects of bacterial intoxication, or of autointoxication, or both.

Bacteria honeycomb the tissues that they infect. The liquefaction of this tissue produces a localized tissue acidosis. The absorption of this necrotic tissue acts as an irritant upon every vital organ in the body. The end result is organic change.

Everyone who drives an automobile knows that constant vibration will cause the crystallization of the metal parts. This crystallization favors a clean break upon the instant of unusual strain. This is an example of organic change.

A piece of timber, as a pile, driven into the bed of a river will in time corrode. This, too, is organic change.

The absorption of vegetable matter in the bones of old people leaving an excess of lime is still another example of organic change.

Suppose you liken the human body to a pond. Pollute the water, the fish will die. The skin is but the outside container of body fluids. Modify the chemistry of these body fluids by the introduction of bacteria and their products; by the addition of acid poisons the result of tissue necrosis; later on add fuel to the fire by the retention of materials that are intended to be eliminated. Now here is your paradox. We know that the addition of acid will dissolve acid salts. Toxic individuals crave sours because sours are acid; fats because fats are acid; in fact just such food and drink that they should avoid. They do this because the acid in their tissues is in combination with vital structures.

The acid in the tissues is an irritant. More acid will temporarily dissolve and will soothe the patient. Therefore they consume the food which affords them relief, even though only temporarily.

The end result is organic change.

Tissue acidosis may be localized in the teeth, the tonsils, the gallbladder, the appendix, the prostate gland, in the pelvic structures. Samples of the whole blood show little of the acidosis, consequently the changes in distant organs reached through the medium of the blood are slow. This results in the individual establishing a tolerance.

Either a low type bacterial or an irritative inflammation becomes established in the kidneys. The resultant reaction causes the kidney substance to snugly fill the non-elastic kidney capsules. This in turn dams back the urinary flow, increasing the quantity of fluid contained in the blood vessels. Hypertension causes a hardening of the renal substance; then degenerative softening.

In eclampsia with hypertension the causative factors are present in greater amount, consequently the organic changes in the involved organs occur more rapidly and the symptoms are those of very acute intoxication.

Hepatic changes, organic in character, the result of haemotogenous intoxication causes pressure on the portal circulation. This in turn congests the gastro-intestinal mucosa causing epigastric pain and gastro-intestinal distress.

Hypertension is also observed in diabetes mellitus. My conception of pancreatic disease has always been and is today an acid intoxication of this organ; a partial or complete destruction of its parenchymatous cells, with the resultant pathological physiology so much discussed at this time.

The urinary findings are not always what one expects. Yet advanced cases albumin and casts are the rule.

As the blood volume increases a greater quantity of blood enters the right auricle. A physiological growth in the musculature of this chamber ensues. Next in turn the right ventricle receives a gradually increasing amount of venous blood. This causes a distension beyond its custom. This receptacle must then develop in keeping with the increasing demands. Dyspnoea is not far in the distance, because at expiration the incoming blood from the right ventricle overfills the lung tissue, thereby crowding the air spaces. At forced inspiration the intra-thoracic pressure is increased and this increase is conveyed by an increased blood column to the left auricle. The left auricle likewise needs to develop.

The biggest task is allotted to the left ventricle, the most powerful chamber of the heart. Its task is first to receive a greatly in-

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creased amount of blood, then to expel it with an even force that will distend the aorta; thereby utilizing the aorta's contractile power as an accessory chamber.

Still the arterial tension continues to rise. The coronary arteries are thickening, are becoming less elastic. The heart is developing an increased capacity. The musculature is growing big and powerful. But the valves are thickening. Their margins are not smooth and clean cut. They do not snugly fit nor completely cover the openings. This affords a chance for a backward current.

Undernourished by anemic blood; the supply reduced by contracting coronary vessels; the task growing bigger by increased peripheral resistance, the heart muscle loses tone. It is unable to completely empty itself. Then is developed a back pressure which finally reaches the vena cava. The surface veins become engorged. The ears, the nose, the fingers, the toes become bluish. The valves in the veins distend and the patient points out knots and asks why.

During all this time the heart is pumping toxic blood. The heart is not immune to the irritant contained in the blood, and it finally begins to develop an excess of fibrous tissue. This is a consequence of the toxic substances being carried to every muscle fibre in the heart through the coronary arteries. Finally the fibrosis becomes so pronounced that microscopic spots of softening develop.

The heart doing an increased amount of work becomes hungry for more sustenance. It draws upon the blood for additional nourishment. These supplies ultimately become depleted. Now your patient is becoming anemic.

Sclerosis of the aorta is equivalent to sounding one's death-knell. Its elasticity is gone. Its aid in propelling the blood column becomes almost nil. The back pressure on the left ventricle favors acute dilatation from cardiac exhaustion. The blood pressure drops. This is a case of broken compensation, which may recover, may remain permanently insufficient, or may succumb.

Over-inflate a rubber glove. One finger will swell until the rubber is transparent and ready to burst. Picture this extra distention as part of the aorta. Such is aneurism. Under emotion, with an excess discharge of adrenalin secretion, too great increase in pressure may cause an aneurism to burst.

The coronary vessels are tightening. The waste products of heart muscle effort are accumulating in the heart muscle itself. This waste is toxic. It is poisonous. It throws the heart into spasm. This is angina pectoris.

As venous pressure increases the blood current in the lung becomes sluggish; hypostasis develops; infection results and dissolution by hypostatic pneumonia may be the final chapter.

Urinary suppression may develop at any time.

While a student in the chemical laboratory at the Louisville Male High School, I received a most profound conception of anemia. At this time it was not anemia but merely an experiment.

A quantity of grey iron filings were gathered into a porcelain dish. This was then weighed by the metric system. This porcelain dish containing the iron filings was then placed on a tripod, over a bunsen burner. It was then heated. The iron filings were allowed to become cold. The iron filings remained red. This was again weighed and found to be heavier. The difference between the grey iron filings and the red iron filings was the oxygen. Incidentally it was proved conclusively that oxygen has weight.

Suppose you visualize the blood channels as railroad tracts; the blood cells as freight cars. In anemia the blood count is low, therefore the freight cars are fewer in number. Also the iron and other minerals contained in the individual red blood cells are deficient—your freight cars are delapidated.

With diminished air space in the lungs, and with dilapidated red blood cells (minus iron and other essentials) in the blood stream, the oxygen carrying or conveying system cannot utilize even the oxygen which is offered.

The result is air hunger; also an inability of the blood to form and to carry off carbon-dioxide. This accumulation of carbon-dioxide stimulates the breathing center in the brain and causes rapid respiration. Especially is this noticeable after effort.

I can conceive of two reasons for the anemia of hypertension. One of the results of an insistent demand for increased food supplies out of the blood; the other, pressure changes in blood making organs themselves. Also take into consideration that the blood making organs are handicapped by insufficient raw material in the blood stream.

The fact of coexisting disease of the kidneys and of the adrenals is definitely established. Just as the toxic products of metabolism effect other body organs, so also does the same toxic material modify the structure and the physiology of the adrenal glands; inducing an excess of discharge and thereby maintaining an augmented arterial tension.

During emotion or excitement there is a

sudden output of adrenalin secretion. This causes contraction of the peripheral blood vessels. Blood is thrown into the internal organs (with the exception of the intestinal tract). This causes cerebral pounding. In hypertension the essential tissues of the body are sensitized by the constant irritation of circulating poisons. Adrenalin stimulation of sensitized tissues not infrequently results fatally, by causing rupture, or cardiac failure.

At the climacteric when the ovaries cease to functionate and the menstrual cycle is an element of history, the vicarious elimination of toxic material which accompanied the flow is also abolished. This loss of elimination is instrumental in developing what has been called physiological hypertension. This term is a misnomer. If the kidneys were equal to the occasion there would be no hypertension. However, add this to your patient's burdens.

A broad view of the endocrine glands and the physiology of their secretions is that they constitute the vis-a-tergo, in other words the vital force. These organs are exceedingly responsive indirectly to toxic nerve stimuli and directly to toxic substances in the blood.

Thyrotoxicosis is made worse by hypertension the result of accumulated poisonous substances in the blood, in the attempt of the thyroid to oxidize the excessive waste.

An accomodating uterus which bleeds excessively during the menstrual flow, thereby acting as a safety valve to a subject of hypertension, may be inadvertently removed.

Hypertension may cause hemorrhage from anywhere.

Any organ can independently undergo organized change without parallel lesions in other organs.

The skull won't stretch. Intracranial pressure increases. Acidosis involves the automatic centers. The patient becomes dizzy. The vision blurred due to central involvement and due to retinal changes. Pressure on the vagus nerve causes bradycardia. Fibrosis of cerebral vessels takes place as elsewhere. Necrotic spots develop causing various degrees of hemorrhage. The result is paralysis of that part of the body whose innervation is derived from the brain area involved.

Softening of the brain develops as a result of compression fibrosis of the small arterioles; due also to inflammatory debris becoming lodged in the cerebral arteries causing extensive necrosis of brain tissue; the same is true following apoplexy. These patients become mental cases.

Increased intracranial pressure causes

drowsiness, unconsciousness, coma, convulsions and death.

SURGICAL ASPECTS OF ARTERIAL HYPERTENSION*

By ELLIS DUNCAN, Louisville.

In considering the surgical aspects of arterial hypertension, the writer can see but three "angles" from which to approach the subject:

First, are there any etiological factors which can be eliminated by the surgeon?

Second, can the surgeon do anything to ameliorate distressing symptoms or to effect a cure?

Third, does arterial hypertension increase the surgical risk and, if so, what means are at our command whereby this added danger may be obviated?

Taking these questions in their order:

First: Surgical causes: Focal infections which may be the source of toxic agents in the blood. Chronic disease of the appendix or gall bladder, salpingitis, infected lymphatic glands, osteomyelitis, infected joints, in fact any infective focus in any part of the body, may be the source of toxic agents which may be constant irritants to the arterial walls or to the vasomotor nervous system. Such foci should be sought for, and if found should be removed if so located that removal is feasible.

Second: Can the surgeon do anything to ameliorate distressing symptoms or to effect a cure? Only, it seems to the writer, in the event that some infective focus is discovered which can be removed by operation, and provided this is done early enough. Then, insofar as that may have been a factor, improvement may be expected, provided organic changes in the vascular system have not already taken place.

Recently operations have been done on the sympathetic nervous system with the object of obliterating peripheral vaso-constrictor nerve pathways supplying large areas (one or both legs,) with the object of providing an extensive area of lowered arterial resistance, thereby reducing the systemic blood pressure and providing an arterial safety valve for other and more important parts of the arterial system, particularly the brain and retina.

Rountree and Adson (Journal Amer. Med. Asso. Sept. 26, 1925) of the Mayo Clinic report recently a case of early malignant hyper-

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tension in a man 33 years old, on whom bilateral lumbar sympathetic neurectomy was done. The most distressing symptoms in this case were weakness and cerebral and retinal symptoms (constant severe occipital headache frequently accompanied by nausea and vomiting the blurring of vision) and they were relieved by the operation, but too short a time had elapsed (6 months) to justify definite conclusions as to the final outcome. Arterial tension was, systolic 230, diastolic 130, three weeks before operation. During the preliminary medical treatment in hospital this was reduced about 30 m.m. The early effect of the operation on the blood pressure was to distinctly lower it (1st two weeks), but this was followed by a gradual rise until in six months it had nearly reached its former level, but without any recurrence of the distressing symptoms of weakness, headaches, blurred vision and gastric distress. Further investigation along this line at least deserves our attention and interest. This operation was followed by sensations of heat and burning in feet and legs, excessive dryness of the skin of feet and legs, apparently complete absence of sweating, and finally by definite symptoms of sciatica; all of which subsided in two weeks, but while they lasted causing a considerable degree of discomfort. The operation consisted in complete removal of the ganglia with the rami and all the branches and trunks of the second, third and fourth lumbar segments of the sympathetic chain on both sides, being done through a median abdominal incision.

As to the third question: We do not believe that the surgical risk is materially increased by the mere existence of hypertension, provided proper case and time are taken in preparation for operation.

The average case of arterial hypertension with which the surgeon has to deal is the patient past middle age (or the really old) who, we might say, normally has to a variable extent the cardio-renal complex, hypertrophy or degeneration of heart muscle with some degree of kidney sclerosis and degeneration, this latter frequently entailing lowered kidney function. In these cases there should be a very thorough and painstaking investigation of the heart and kidney, and a margin of safety should be secured by a more prolonged period of preparation with the object of taking the patient to the operating room with materially, if temporarily, reduced blood pressure, thus reducing to a minimum the danger of cerebral hemorrhage or any other complication incident to arterial hypertension during or following the operation. Theoretically it would seem that any factor even slightly aug-

menting an arterial tension, already far above normal, would subject the patient to an added danger of cerebral apoplexy; and that such a factor might be supplied thru the effect of the anaesthetic or the mere psychic effect produced upon him and which presumably would be at its maximum at the time of going under the anaesthetic or at the beginning of the operation; but we know that as a matter of fact cerebral hemorrhage during or following shortly after operation is one of the rarest accidents.

With reference to anaesthetics: Ether at its inception usually raises blood pressure slightly, but this is soon followed by a return to the individual's normal where it remains. Nitrous oxide as a rule causes a slight rise in blood pressure which is maintained thruout the period of its administration.

Preparation should consist in several days' rest in the hospital so that the patient may become accustomed to his surroundings and to the ordinary hospital routine, insuring, if possible, a few nights' normal sleep; laxatives; withdrawal or reduction of tobacco, alcoholic or other stimulants; regulation of diet, particularly with reference to excess of proteids; nitrites; warm baths; and protection from mental strain.

THE TREATMENT OF ARTERIAL HYPERTENSION*

By EMMET F. HORINE, Louisville.

Because of its increasing frequency and dire consequences, arterial hypertension deserves especial study. In the past its treatment has been unsatisfactory and disheartening. But at present with at least a beginning knowledge of its causation the treatment will be more efficacious.

Before treatment of any kind is begun certain questions must be carefully considered and answered. Is the hypertension a so-called primary or essential one? Is there a concomitant nephritis? Or is the hypertension associated with diabetes mellitus? And for women a fourth question must be considered: are we dealing with a "climacteric hypertension?" In addition to answering the above question an appraisal of the heart should be carefully made utilizing the various functional tests for cardiac efficiency and further attempt to evaluate the state of the myocardium by the aid of the electrocardiograph. Finally the patient should be very carefully examined for any possible focus of infection. When the above questions have been answered intelligent treatment may be

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begun and an accurate prognosis may be formulated.

Until quite recently, in cases of hypertension, an attempt was always made to reduce the pressure directly by the administration of the vasodilators. In the present state of our knowledge such treatment is rarely advisable and may, under certain conditions, be actually harmful.

As probably the first step in the treatment of a patient with arterial hypertension the removal of any possible focus of infection should be practiced. Remember in searching for foci of infection that they are often "silent" and that no portion of the body can be considered as not harboring a focus unless actually examined.

It is a noteworthy feature that many patients with hypertension are always extremely alert and working under high tension both mental and physical. Right here much can be accomplished if the patient can be made to realize that mental strain and overwork are both injurious. The necessity for relaxation and frequent vacations should be emphasized. Light exercise in the open air will be found of value, especially golf and walking. If the patient with hypertension is seen early enough and if he will co-operate fully in a program of work, play, rest and sleep in moderation and above all, mental composure, I believe the progress of the condition can be entirely arrested.

The dietetic management is next in importance and much can be accomplished by proper regulation. Especially is this true if the hypertensive case is obese, for definite improvement follows reduction in weight. Even though the individual is not overweight the food intake should be low and regulated so that constipation, if present, may be overcome. In the light of recent studies proteins may be permitted in moderate amounts. Reduction in the salt intake to thirty grains daily is advisable except in the nephritic type in which the salt intake should be maintained at a higher level. The use of tobacco, tea and coffee should be discontinued or reduced to a minimum. It is hardly necessary to add that the diabetic type must be managed largely as a diabetic.

In the past many authorities recommended decided reduction in the fluid intake. That such reduction was followed by improvement, at times, is true but not sufficiently often it would seem to justify the hardship suffered. The present practice seems to be away from much reduction in fluid intake for the ordinary case.

The nitrites will be found of definite value

if the pressure mounts to high levels and if threatening signs of cerebral hemorrhage appear such as vertigo or severe headache. Also the nitrites will be quite serviceable if angina pectoris arises as a complication. But the routine use of the nitrites, as previously mentioned, is no longer practiced. For a while it was thought that benzyl benzoate would be of value, but unfortunately early hopes with reference to it have not been justified by results. For prolonged administration iodides, in some form, are quite valuable. If there is any tendency to constipation the protoiodide of mercury in one fourth to one half grain does three times daily may be given with benefit over long periods. If constipation is not present then strontium or sodium iodide may be used. After many years of observation of the effect of the iodides in hypertension their use can certainly be advised.

During the past few years and especially since the work of Kylin on "Blood Calcium in Hypertension" (*Zentralbl. f. inn. Med.* 45:471-473, June 14, 1914) the administration of calcium has been more extensively employed and followed by quite promising results. Kylin found the blood calcium at a slightly lower level in hypertensive cases than in controls. Usually from fifty to three hundred grains of either calcium lactate or calcium chloride are given daily for weeks or even longer. Just recently Reid (*Boston M. & S. J.* 192:883-890, May 7, 1925) in reviewing the theories concerning the causation of hypertension suggests that "a diet deficient in calcium is the primary cause of arterial hypertension."

In the so-called climacteric hypertension in addition to the treatment as already outlined corpus luteum should be tried or even the whole gland.

For the control of nervous symptoms the bromides are valuable and of themselves have a tendency to lower blood pressure. Just recently Gruber, Schackelford and Eeklund (*Archives Int. Med.*, 36: 366-381, Sept. 1925) have called attention to the favorable effect of luminal (phenobarbital) not only in controlling insomnia and headache but also in actually reducing the blood-pressure. They do not feel that luminal is in any sense a cure but that it is a useful symptomatic remedy.

If cardiac failure with edema is present when the patient is first seen then absolute rest should be advised and large doses of calcium given. Further a straight milk diet is of real value. Digitalis is only of limited value unless auricular fibrillation is present.

In selected cases venesection may be prac-

ticed at intervals of from two to six months. Venesection should be not be done except when other measures have failed and when performed careful management should be continued.

Within the past few months the details of some very interesting work on the blood-pressure reducing effect of liver extract have been published by McDonald (Canadian Med. Assn. Jr., 15: 697, July, 1925) and also by Major (Journal A. M. A. 85: 251; July 25, 1925). With this in addition to the other recent work on hypertension it would seem that the hitherto unknown etiology is nearing a solution and a dreaded menace brought under control.

DISCUSSIONS

Carl Weidner, Sr.: This is a subject in which the entire medical profession is much interested. After all that has been written and said we still do not know the cause of hypertension. We do know that the main factor is the difference between the pressure in the heart and large vessels on the one hand and the peripheral arterio-capillary system on the other. This vasomotor disturbance is most likely due to toxic substances the result of disturbed metabolism, either overproduction or impaired excretion of toxic agents which cause vasomotor disturbance resulting in either spasm or constriction of the smaller arteries and capillaries. Many theories have been advanced. I draw attention to experiments by Ralph H. Major who thinks that methyl-guarcidin may be one of these toxic agents. Parathyroid extract and increased blood calcium were found to lower blood pressure.

Psychic influences frequently cause hypertension, as mental strain, excitement, worry, etc. Observations have been recorded of cases in which a high tension may drop 30 to 60 points within the short time of half an hour.

The point mentioned by Dr. Coon may be explained by hemorrhage during surgical operation and by the effect of nitrous oxide causing slowing of the blood current in the venous capillaries and thus causing increased pressure on the arterial end.

As to treatment: We should remove the cause if possible, otherwise treat it symptomatically. Sufficient rest and recreation, proper habits of life, careful,—chiefly vegetable and fruit,—diet, proper elimination and avoidance of mental strain and excitement, are most essential. Complete rest may be necessary in severe cases. Alkaline salines and iodides are indicated. Vasodilators, such as the nitrites, are of temporary benefit.

In some cases of hypertension occurring in over-nourished plethoric types, I believe we are justified to draw a pint or more of blood by venesection. This will oftentimes afford relief and

may retard the final danger of an apoplexy or heart failure for quite a while.

In many instances of hypertension nephritis develops as a concomitant disease. I think we ought to differentiate between nephritis, as such, and hypertension causing kidney changes. It is a fact that the majority of individuals with hypertension show evidence of kidney disturbance. Hypertension is not the result of renal disease but the kidney disease is the result of hypertension most likely. As a means of differentiation between nephritis and hypertension cases it may be stated that the urine in the latter is usually more concentrated and is not passed so frequently during the night. Albumin and casts are similar in both varieties.

J. Garland Sherrill: When the first speaker closed I felt that we knew all about the cause of hypertension. After hearing the last speaker I am inclined to doubt my former conclusions.

Arterial hypertension is a subject in which we are all interested, whether it be from a medical, surgical or purely personal standpoint. No one has said anything about the kinetic drive which Crile mention as a cause of high tension. Epinephrin or adrenalin if you prefer the latter name has great driving or activating power in causing constriction of the terminal vessels. This substance acts rather constantly on the blood vessels after a certain period of life. When an individual is young his vessels and muscles are soft and pliable; when he gets old his muscles are stiff and he cannot stoop and arise as readily as before. Dr. Doherty would say it is the food, that the person eats too much meat, and perhaps he is right. Those who live on a strictly vegetable diet are said not to have arterial hypertension. One of my friends who had blood pressure of 200 mm. Hg. said he had improved himself remarkably by drinking the juice of sauer kraut.

What is it that makes the blood vessels tense? We have been told that it is lack of calcium in the system, yet we know there is more calcium in the blood vessels in high tension than at any other time. It is a fact that one is not getting rid of the calcium that enters the body. Calcium deposition in transit, that is an important thing. A person can keep young and supple if he knows how to eat, and can prevent infection. Diseases of the blood vessels are in a large percentage of cases due to syphilis. Next to syphilis is infection as mentioned by Dr. Emrich. although I do not agree with many of the claims he made in his paper. There are certain cases of hypertension that are due to infection. Increased tension in the blood vessels comes in two ways, viz., through the nervous system and through direct action of a toxin on the terminal vessel causing them to contract.

I recall that on one occasion the thyroid gland

was removed for cancer. As a result of removal of the gland the sympathetics in the neck became damaged, there being a zone of redness involving all of one side of the face. Dilation of the blood vessels result from sympathectomy, but this does not cause high blood pressure.

The way to cure hypertension is not to get it. High tension can be prevented if one is careful in living, gets plenty of rest enough sleep, does not drink too much, does not eat too much meat, and lastly does not get infection.

Dr. Solomon recently said that every tonsil ought to be removed before it became infected. We do not agree with this teaching. If the tonsil becomes infected and is causing any damage, it certainly ought to be removed. Small abscesses at the roots of teeth, in the prostate gland, in the oviducts, suppuration in the gall-bladder, etc. do not necessarily cause arterial hypertension. The cause of the trouble is pus under tension. The smallest amount of pus under tension will be absorbed into the blood vessels and that will have its effect. It acts directly on the blood, the blood acts on the vessels, the vessels contract locally, and they contract suddenly.

The nervous influence in producing hypertension is important. I know one woman whose blood pressure was 110 mm. Hg. Two weeks later following death of a relative her blood pressure suddenly rose to 210. This as a psychic phenomenon and cannot always be controlled. Much can be done, however, if patients are taught how to live and their lives may be prolonged in comfort for many years. The most important features are a normal amount of food, exercise and free elimination. Mr. Lane was right about some things and wrong about many others. We should get rid of the toxic products which are absorbed into the body constantly from the alimentary canal. These patients all have high tension.

In the present rush and bustle of American life people are always "keyed-up" to the highest pitch they are always going and do not get sufficient rest and recreation, and this is conducive to the production of high arterial tension.

Why does the blood pressure suddenly decline in these patients? It is because of the softened dilated heart, the heart has no power, it cannot overcome the resistance at the periphery. Until a certain point is reached the heart may be quite as strong as formerly, but the blood vessels contract and the blood cannot be forced through!

Wm. B. Dougherty: I want to emphasize the importance of everything Dr. Sherrill has said. If people would correct their daily mode of living in accordance with physiological principles, very few would be afflicted with hypertension. Consider the daily routine of the average business or professional man: His breakfast is eaten hurriedly; he smokes and drives at break-neck speed, in high tension, to his office; he

smokes again and again and sits in his office until lunch hour. His lunch or luncheon consists generally of a feast of rich proteins saturated with blistering condiments, followed by indigestible sweets; smoking again, and rapid driving to his home, eating another big meal followed by a visit to the theatre or picture show and retiring usually at twelve o'clock, constitute his remaining duties of the day. He eats and smokes too much, takes too little exercise and does not get enough sleep. He is guilty of all the factors that tend to produce hypertension, viz., autointoxication and infection from indulgence in excessive food, and nicotine, sleepless nights, and often business hurry and worry.

We must go back to plain living and high thinking if we are to be here long. We should be Health Advisers to our patients as well as able diagnosticians if we wish to discharge our duties fully.

C. H. Harris: I have enjoyed all the papers that have been read and also the discussion. As physicians I think we ought to draw a definite line between hypertension and arteriosclerosis. There is such a distinctive line to be drawn, and I believe it behooves us to differentiate between functional hypertension and hypertension brought about by organic changes. We know that nearly everyone who comes to the office wants the blood pressure taken. This has become very popular with patients. Everyone who comes to my office wants the blood pressure taken before leaving.

As Dr. Doherty has said, people have gotten away from the right way of living, they are constantly on the rush and in a turmoil, on the alert for excitement. This is bound to cause more or less destruction to the body tissues. People take no physical exercise, if they are going a few blocks they ride in the street car or automobile. They are rushing somewhere from morning until late at night. It is little wonder that arterial hypertension is common.

One thing not mentioned here tonight which should be considered in a practical study of this subject, and that is the disposition to hereditary influence. We know that in all organized life the influence of heredity is shown in the cells and tissues of the body. That is the reason certain individuals present various characteristics, they inherit them. This likewise explains the variations in disposition and type of different people. One man may come into the world with a good constitution, but by rush and turmoil lessen his span of life, while another may come into the world with bad heredity, but by living properly has no trouble.

Dr. Sherrill struck the keynote when he said syphilis was perhaps the greatest factor in the production of arterial degeneration. There are

so many paradoxical things in regard to the blood vessels that we do not know just where we stand. I have seen autopsies where the heart was seriously diseased, still the individual during life never exhibited any signs of trouble. I have always believed there was more danger after the meridian of life from hypertension than hypotension. High blood pressure simply means some functional disturbance in the majority of instances. It is not always due to organic changes. The vascular system is able to withstand high pressure for a long time under certain circumstances. Most people show considerable variation in blood pressure at different times. I know one man who has had a blood pressure of 240 to 250 mm. Hg. for more than ten years, and he is still living in comparative comfort.

As to infections: The deposit of inflammatory material about the valves of the heart, abscesses with granulomatous deposits about the teeth, infected tonsils, in fact foci of infection anywhere in the body have a tendency to produce high blood pressure. I am inclined to regard high blood pressure under all circumstances as compensatory. I have under observation a woman whose blood pressure has been 200 ever since I first saw her. Under the administration of appropriate medication and regulation of diet, especially reduction of protein foods, she has remained comfortable notwithstanding the high blood pressure.

Another point I want to make is that we do not believe that angina pectoris is due to high blood pressure. Every physician has seen patients die of angina pectoris where there had never been any evidence of arterial hypertension. We used to think that angina pectoris was the result of intermittent claudication with great contraction of the coronary arteries. We do not believe that theory any more, and this idea of causation has been abandoned. Neither do we believe that sudden death, like a man falling dead on the street, is apoplectic in origin. He might fall and be unconscious from an attack of apoplexy, but this does not produce sudden death as formerly believed. When a man drops dead in his tracks he either has rupture of an aortic aneurism, a pulmonary aneurism, or dilation of the heart.

In my opinion it is a mistake to tell patients they have a blood pressure of 200 or 250 mm. Hg. They regard it as a serious matter and constantly worry over it. If we will teach our patients the right way of living, regulate their diet, advise rest, recreation and sleep, they will get along better if they do not know what their blood pressure reading is. I have never told one of my patients that the blood pressure was 250.

I agree with Dr. Doherty that people must return to the old way of living and eat less if

they want to avoid arterial hypertension.

Fritz C. Askenstedt (in closing): In the discussion tonight various agents have been suggested as the cause of high blood pressure. Some men have said flatly that we do not know the cause. There is as yet no scientific explanation of the relation of those agents that have been mentioned as producing arterial hypertension, because we do not know their *modus operandi*. We are getting closer, however, to the etiology of the disease, and we know at present time that the very earliest manifestation of it is a hypersensitiveness of the vasomotor system, causing spasm of the peripheral arteries.

There is one peculiar thing about high blood pressure: If you administer adrenalin it does not materially raise the blood pressure, and in some instances there results an actual lowering of tension. This is accounted for by a preponderance of the action of the vagus over the sympathetic system, in hypertension inhibiting the normal stimulation of adrenalin upon the latter system. This action is also observed, to some extent, in the production of hyperglycemia by adrenalin, which, according to Kylin, in hypertension shows a flatter curve.

Much has been said tonight regarding the importance of diet in arterial hypertension. Some years ago I looked over my urine analysis records to detect any difference in the excretion of urea, phosphoric acid, ammonia, indican, and uric acid in patients with hypertension and in those with normal blood pressures. The urea-phosphoric acid, urea-ammonia, urea-indican ratios were practically the same, but there was a marked lowering of the urea-uric acid ratio, showing a relative excess of uric acid. There was no absolute excess of uric acid, so uric acid could not have been the cause of the hypertension. Where there already exists a relative excess of uric acid as a result of a disturbed protein metabolism, it seems irrational to further increase this harmful metabolite by a liberal meat diet.

As to the relation of diabetes to hypertension, there seems to be two forms of diabetes: one connected with high blood pressure, the other independent of it. A diabetic patient under forty years of age usually presents no hypertension, while in the older patient diabetes runs a less malignant course. In the latter case, diabetes is probably secondary to arteriosclerosis and not the cause of hypertension as we have formerly been taught.

The relation between high blood pressure and kidney disease has always been one of great interest. Finding a high blood pressure in connection with albuminuria we have been prone to make a diagnosis of nephritis, attributing the hypertension to the latter. This has been incorrect, as a rule. It is true that exceptionally

we may meet with a case of chronic interstitial nephritis running a shorter course than usual, ending in uremia—the so-called malignant form. But these cases are comparatively rare for although almost all cases of chronic hypertension are attended by contracted kidneys, this contraction seldom reaches an extent—3-4 or more of the kidneys—which involves true uremia, the great majority of patients dying either from heart or brain complications. At first these cases of hypertension show no renal involvement. Later, as the disease advances and the contraction of the kidneys takes place, an occasional cast and a small amount of albumin will be found in the urine, indicating renal involvement, but usually no excess of non-protein nitrogen is detected in the blood during the life of the patient. Even as delicate test as Ambard's will show a perfectly normal coefficient in about one-half of the cases. The excretion of urine may be more profuse at night than during the day simply because it takes the kidneys, on account of their contraction, longer time to excrete the water consumed during the day. This can be ascertained by any of the more recent water tests.

As to treatment: Regulation of the diet, as has been advised by most men taking part in the discussion tonight, is one of the most important features. In most cases there should be a reduction of the intake of protein so as not to exceed 80 gms., since protein metabolism is evidently disturbed. A quart of milk and one egg per day, with such proteins as a variety of cereals and vegetables will furnish, I regard as adequate. The hypersensitiveness of the vasomotor system to psychic influences should direct our attention to such possible causes as emotions, worry, sleeplessness, overwork, etc., enforcing proper rest, quietude, and advising avoidance of the habitual use of nerve stimulants.

I might make mention of autocondensation as a therapeutic agent. About one half of my cases have been materially helped by this treatment but I am as yet unable to specify what kind of cases of chronic hypertension that are most susceptible to it. In fact, a patient may present a blood pressure refractive to a two months' series of treatment at one time, and a year or two later the hypertension may be permanently reduced by another series. If hypertension is induced by a hypersensitiveness of the vasomotor system, and autocondensation is a nerve sedative of more than temporary value, its application does not seem irrational.

W. H. Emrich (in closing): It is difference of opinion that makes the world go around. It is difference of opinion that induces us to discuss questions like arterial hypertension. If we were all of the same opinion there would be nothing to discuss. We base our opinions upon our personal experiences and upon the data and

knowledge which we get from other sources.

As to the question of arterial hypertension which is found necessarily during the climacteric: I do not believe it is physiological, I do not believe it is normal. If the renal functions were normal there would be no hypertension. I believe it is due to irritation, the consequence of infection, the consequence of retention of toxic material, or both. If there is lack of elimination and so-called hypertension in the climacteric, I do not believe it is physiological. We know that the menstrual flow is normal, but it does service also as a means of vicarious elimination.

As to the urinary findings: We can only base our opinions upon our conceptions. There are many things we do not know from our own personal knowledge. It may be possible that only the supportive structures of the kidney may be involved in fibrosis, not the secreting or excreting cells. Therefore, possibly under these conditions the urinary findings may not be the indication of any trouble. The urinary findings will depend upon that portion of the kidney structure involved.

Reference was made to the site of infection. The tonsils and teeth have been prominently mentioned, also the prostate gland and female pelvis and the gall bladder might well be included. If there are bacteria in these tissues, which bacteria draw upon the blood and upon the tissue for their sustenance and into which they pour their toxic products, this toxic material is absorbed by the lymphatic system and by the blood stream with damaging effects. The indications are of course, surgical removal of the foci of infection wherever found.

As to the endocrine system: It would not be far-fetched to believe that the endocrine system is subject to the same influences as the other organs of the body. I believe through secondary influences and also through primary toxic material which reaches these glands by way of the blood channels that the organs of internal secretion are involved and therefore play a part in the reduction of high blood pressure.

As to treatment: Besides removal of the cause, there are several other things which may be done if the patient is seen early enough. If the involved tissue can be removed, that should be accomplished by all means. When it comes to clinical therapy, I make it a practice to administer fifteen grains of sodium iodide intravenously with a ten cubic centimeter syringe, and at the same time before withdrawing the needle from the vein the syringe is filled with blood; in other words I withdraw ten cubic centimeters of blood. This is done on the average of twice each week. I also advocate an acid free diet.

An interesting observation some years ago was this: The patient was a child born when

his mother was fifty years of age. She had previously borne a large family. The woman showed evidences of toxemia. There never was a positive Wassermann in any of the family. This child very early in his life had eczema which I took to be a skin manifestation of toxic material in the system. The child was always anemic, of good average mentality, yet lacked the ambition characteristic of the family. Later on as this individual entered into young manhood it was observed that his blood pressure was very high. Finally he practically lost his vision. His blood pressure reached 250 mm. Hg. followed by complete suppression of urine, convulsions and death.

The point I want to make is this: The mother's blood being toxic so saturation could not absorb toxic material from the fetal circulation. The fetal nourishment was acid. (apply a strip of alkaline litmus to the nipples of your nursing mothers to see how many of them are feeding their babies acid that is acid milk). Throughout childhood the blood was charged with these toxic materials. A toxic habit was established and in consequence the growth and development of the child was impeded. While we may debate the exact nature of this toxic material, we know that such things occur. In this particular case the child was born handicapped, nursed of a toxic mother, developed eczema which is nothing other than surface evidence of systemic distress, and the other symptoms which later followed, causing a fatal termination.

Ellis Duncan (in closing): I have nothing to say with reference to one case in my experience, in which I practiced venesection in compliance with the demand of the patient, and against my best judgment. This was a patient who had a systolic blood pressure of 250 mm. Hg. and suffered intensely from headache. Eight hundred c.c. of blood were withdrawn, and the systolic pressure dropped back about one hundred points. Her symptoms were relieved for a few hours only. In a few days her blood pressure was again 250 and her headache had returned.

Emmet F. Horine (in closing): With reference to venesection: I am glad this has been mentioned by Dr. Duncan and some of the other speakers. Certainly in many cases venesection will be of decided value. Occasionally, however, we will encounter cases similar to the one mentioned by Dr. Duncan. But in the majority of instances after venesection the blood pressure not only will be reduced for the time being, but it will remain at a lower level for weeks and often months. The individual upon whom venesection is done should be one of plethoric type, and further venesection should be done only after ordinary means have failed to properly control the condition.

The use of calcium is an extremely interesting

one and a great deal of work is being done along this line. Certainly with reference to diet it seems that everyone is agreed that those people with high arterial tension should live largely on leafy vegetables, lettuce, cabbage, greens, etc. all of which have a high calcium content. People who live principally on vegetables rarely suffer from high blood pressure, so there must be something in the role of calcium in at least preventing high blood pressure.

A CASE FOR SURGICAL DIAGNOSIS*

By **BEN CARLOS FRAZIER**, Louisville.

The object of the following notes is to describe a case for the surgeons present to discuss.

One of my female patients requested me to see her maid in consultation with Dr. Latimor. I had known the woman for thirty years, and she had been maid to my patient for about eighteen years.

The patient had a large multiple fibroid tumor of the uterus of which I had been aware for many years. However, she had always been well apparently and had lost no time from work. She is thin but has always been active and quick. Dr. Latimor was called to see her seven or eight days prior to our consultation. On Sunday night the patient had a violent attack of vomiting and complained of severe pain in the epigastrium. Hot applications had been used and opiates administered.

At the time of my visit the patient's temperature was 102 degrees F., pulse 120, there was great tympany, and besides the entire abdominal cavity was filled with the immense fibroid tumor mentioned. The doctor thought she ought to be operated upon at once, but I told him she could not be subjected to operation in her condition because it would mean a fatal termination. The patient seemed confident that "the pain came from her gall bladder." She was slightly jaundiced. The urine contained a small quantity of bile, albumin, blood, and an occasional cast. I advised simply keeping her in bed, and taking care of her, doing nothing else.

Four days later I saw the patient again and her condition was about the same. At my next visit, three days afterward, in examining her abdomen I discovered what seemed to be an umbilical hernia. She had a soft swelling at the umbilicus, but there was no impulse on coughing or movement.

The following day the doctor telephoned that the patient was worse and asked me to see her again with him, which I did, and then recognized that the supposed hernia was

*Read before the Louisville Medico-Chirurgical Society.

really an umbilical abscess. As I did not believe she could be safely moved to the hospital, I opened the abscess with bistoury which liberated one and a half pints of very offensive fluid. The patient was lying on her right side at the time, and was turned on her left side to facilitate drainage. After this was complete there remained a deep cavity in the abdomen. I could not be sure then, and am not sure now, where the fluid material originated.

The next morning the patient's temperature was normal and she has been doing well since until two days ago when there was noticed some congestion of the lungs.

DISCUSSION

L Wallace Frank: One of the first things to be considered in a case of this kind is a pedunculated fibroid that has become twisted upon itself and gangrene has resulted. I operated upon a somewhat similar case at the city hospital not long ago. A woman was admitted with a history of pulmonary trouble, but examination of her lungs disclosed nothing abnormal. She had a movable tumor in her right side, she complained of constant pain, vomiting, and fever. When I saw her three or four weeks afterward she still complained of abdominal pain and was still vomiting. I made the diagnosis of "tumor with twisted pedicle" but this was found not to be true when the abdomen was opened. It developed later that the woman did actually have pulmonary tuberculosis.

One thing we must consider in this type of fibroids is that they may become twisted and gangrenous from loss of blood supply. When that occurs secondary infection is not uncommon and a localized peritonitis with abscess may result.

In Dr. Frazier's case the abscess was in the upper abdominal cavity, not in the pelvis. This excludes the ovaries and probably also the appendix. If the trouble had been primarily in the pelvis, the abscess would most likely have ruptured into the rectum or vagina, it would not have pointed at the umbilicus.

I believe there was a twisted fibroid tumor which became gangrenous.

John W. Price, Jr.: Dr. Frank's suggestion is probably the most logical one. While Dr. Frazier was relating the symptoms in his case, I thought it more than likely that the patient had some trouble about the gall bladder which had extended along the round ligament of the liver and thence to the umbilicus. This is simply mentioned as a possibility.

J. Garland Sherrill: Considering the presence of fever, pain, nausea and vomiting, the first thing one would expect is appendicitis; second, we would have to think about disease of the gall

bladder; third, torsion of a fibroid tumor as mentioned by Dr. Frank. A fibroid tumor is exactly like an ovarian cyst in its results. In all the cases of torsion I have seen, either ovarian cysts or pedunculated fibroid tumors, the patients had symptoms simulating intestinal obstruction. Appendicitis frequently is accompanied by symptoms resembling those of obstruction, so the diagnosis is often obscured. Appendicitis, however, can occur without serious disturbance of the intestinal function. Gall bladder disease can occur also with regular intestinal evacuations. An abscess may form in the gall bladder region and extend downward along the round ligament of the liver to the umbilicus and point there. In one of my early cases an appendiceal abscess ruptured at the umbilicus spontaneously. I do not now recall a case in which pyosalpinx ruptured at the umbilicus, but it is mentioned in the literature particularly in pyosalpinx gonorrheal in type.

The case reported impresses me as being most likely one of appendicitis with abscess formation, the pus cavity extending into the umbilical region. Of course, it may be a twisted nodule of the fibroid tumor present with gangrene as mentioned by Dr. Frank.

Owsley Grant: From Dr. Frazier's description of the case, I am impressed with the fact that his patient had an infected vesical diverticulum. Of course that would not explain the jaundice, but it would explain the pain, infection, and other symptoms. Cases of persistently patent urachi are not uncommon and when infection occurs the abscess points at the umbilicus. I have seen several urinary fistula, urachal in type, where infection occurred from vesical diverticular. In these cases an opening occurred at the umbilicus.

Ben Carlos Frazier (in closing): I am inclined to the opinion that Dr. Price has offered the correct solution in the case reported. The patient complained of pain high in the abdomen. There was also pain around the umbilicus for two days before the abscess was opened. The pain was referred to the epigastrium, around the liver, and confined to the right side. The patient wanted to lie on her right side constantly with an electric pad over the liver region on account of the pain. Even after the abscess was opened she insisted upon lying on her right side. I believe the trouble originated in the gall bladder region.

The patient died within a month after the foregoing report was made, of exhaustion and uremia. The kidneys excreted very little urine during the last week. The urine contained a large amount of albumin, had a high specific gravity, and was also filled with granular casts.

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COUNTY SOCIETY REPORTS

Harrison: The Harrison County Medical Society held the regular monthly meeting November 1, 1926, at the office of Drs. Martin, Rees, Moore and McDowell. Members and visitors present were Drs. Wood, Renfro, Ross, Martin, Wells, McIlvain, Carr, Wyles, Way, Sanford, N. W. Moore, Rees, W. B. Moore, Scott, Harvey, Blount and Henry.

Meetings called to order by President J. M. Rees. Minutes of October meeting approved as read.

J. Martin reported complicated labor case. Occiput posterior and baby has umbilical hernia, larger than goose egg. Purse string suture applied and baby appears to be doing well.

R. W. Wood reported case of pellagra. On motion seconded and carried. President selected J. E. Wells, J. Martin and W. B. Moore, committee to appear before Fiscal Court and request the court to make appropriation of \$1,000 to Health and Welfare League. Committee on water works asked for further time which was reluctantly granted.

E. McIlvain, Wells and W. B. Moore appointed committee to arrange for December meeting. Dr. C. Scott read the paper on Myocardial Damage in Coronary Occlusion. Discussed by Drs. Harvey, Wells, Martin, Carr N. W. Moore and closed by Dr. Scott.

Meeting adjourned.

W. B. MOORE, Secretary.

Adair, Green and Taylor Counties: The Adair, Green and Taylor County Medical Societies held their joint annual meeting in Campbellsville December 22, 1926. After a short business session the meeting adjourned to the Merchants Hotel where a banquet was spread, and papers read.

Because of high water no representative from Green County could be present. S. P. Miller and W. J. Flowers of Adair County were present. Of Taylor County E. L. Gowdy, B. T. Black, C. V. Hiestand, F. I. Buckner, O. H. Shivley, J. L. Atkinson, W. B. Atkinson, O. M. Kelsay, and W. R. Elrod attended. Irvin Abell was the guest of honor. Other special guests were: Raymond Evans of Louisville, Baldrick and Crenshaw of Lebanon, R. A. Sanders, D.D.S., S. L. Dunbar, D.D.S., and Henry Moody, M.D.

Short talks were made by Drs. Hiestand, Flowers, Baldrick, Shivley, Sanders and Gowdy. Raymond Evans read a very instructive paper on "Peptic Ulcer" covering the subject in a very scientific manner. Irvin Abell delivered an essay on "Surgical Tuberculosis," thorough, concise and informing.

W. B. ATKINSON, Secretary.



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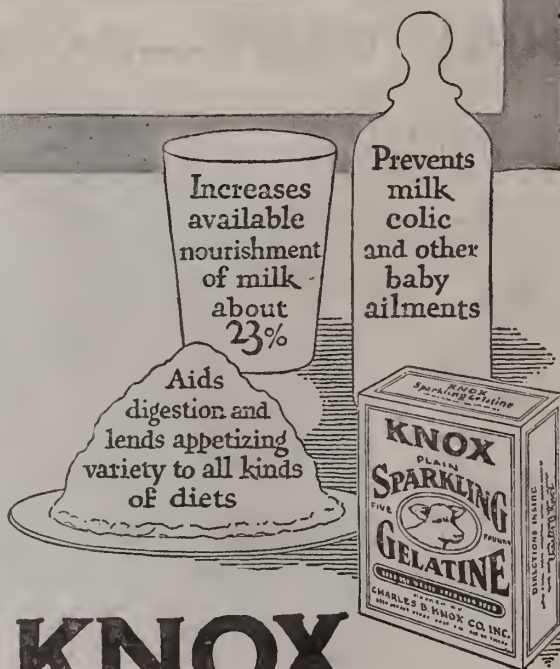
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The book has been reset from cover to cover. It had to be! First, there was the new revision of the *United States Pharmacopia*. This necessitated a thorough review of the preparations, making them conform to the new standard and changing the nomenclature and spelling accordingly.

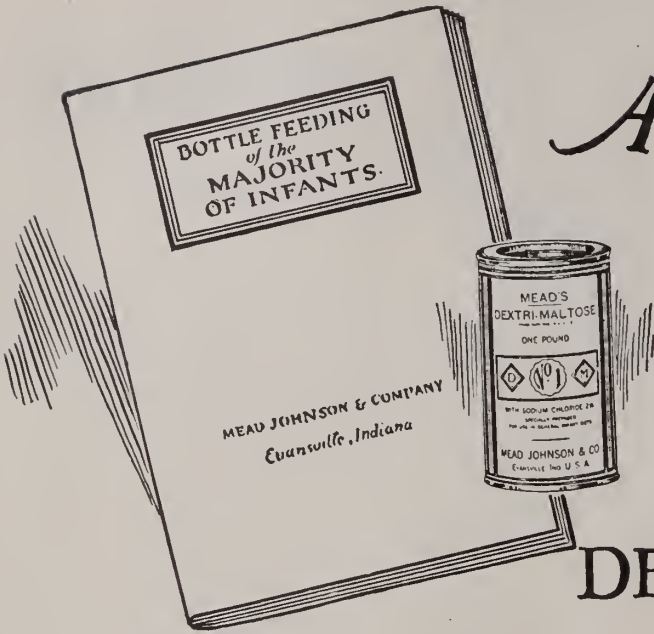
Then, the accelerated pace of pharmacologic investigation has brought into therapeutics many essentially new drugs, such as insulin, ethylene, and parathyroid hormone. In many subjects, such as the autonomic system, chemotherapy, lead poisoning, etc., new conceptions have come forward. All these changes necessitated a virtual rewriting of the entire book.

As the work is planned to be of use in clinical medicine, that information which has a direct bearing upon the practice of medicine has been put in the larger-sized type, while data of less frequent use have been relegated to a smaller-sized type. This arrangement has been facilitated by the generous use of paragraph headings. The bibliography remains as heretofore a distinct feature of this book. It has been revised and some 1200 new titles added. In the Appendix will be found a check list for study of important preparations and a tabulation of average doses.

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KENTUCKY MEDICAL JOURNAL

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Published Under the Auspices of the Council

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EDITORIAL

INFORMATION PERTAINING TO THE ORGANIZED RESERVES, MEDICAL DEPARTMENT.

1. The War Department has directed that the Fifth Corps Area, consisting of the states of Ohio, Indiana, Kentucky and West Virginia, furnish 2439 Medical Reserve Officers as its quota in the National Defense Plan.

2. There are 120 units required to be organized and these consist of Medical Regiments; General, Surgical, Evacuation and Station Hospitals; Hospital Trains; Surgical Groups; and various Zone of the Interior installations.

3. There are now 1079 physicians commissioned in the Reserve Corps in this Corps Area, leaving 1360 vacancies to be filled.

4. Appointment in the Reserve Corps is made for a period of five years and any licensed physician is eligible for appointment.

5. Those having had World War service are entitled to a commission one grade higher than held during the war; others can only be commissioned as First Lieutenants and must be between the ages of 21 and 36 years.

6. Reserve Officers cannot be ordered to active duty without their consent except in time of a national emergency expressly declared by Congress.

7. Application blanks for appointment and further information may be obtained from the Surgeon, Fifth Corps Area, Columbus, Ohio.

8. If you are already an officer of the Medical Reserve Corps it is desired that you get in contact with physicians in your vicinity who are not in the Medical Reserve Corps, with a view of getting them to join.

9. If you are not a commissioned officer in the Medical Reserve Corps we want you to join if you come within the provision as set forth in paragraph 5 of this circular.

10. We, as American citizens (this applies also to the Nationals of any other country or state) are indebted to our Government for the privileges we enjoy in the matter of freedom, liberty and protection which is guaranteed to us under our flag, the symbol of our Government—a government conceived in liberty and dedicated to the prop-

osition that all men are created equal. Our Flag, since the adoption by our forefathers, has never been lowered to any foreign nation or potentate; a flag so conceived and so dedicated can never be supplanted by any other flag when the citizens over whom it floats and affords protection remain loyal and true. In the early days of our government it required all able-bodied citizens between the ages of 18 and 40 years to assemble once a year at a rendezvous for muster and military training to the end that all such could receive instructions in military matters in case their services were needed in an emergency. While this is no longer required by law it is believed that it would be a great national asset and the most effective method of preventing future wars, if all able-bodied citizens were required to devote 2 or 3 years of their lives to military training before entering upon their civilian duties. Military training never hurts anyone. It is an asset to the youths of our country. It teaches discipline and obedience, develops physique and makes them respect the laws of the land and their seniors and above all makes them true, loyal and law-abiding citizens of whom we have not too many nowadays. We of the medical profession are by nature of things the guardians of the health of our citizens in time of peace. In time of war we have a double function—professional and military. For the proper performance of the latter we must be trained and educated in our duties. The uniform does not make an officer. To properly perform your functions as an officer of the Medical Corps you must be trained. Above all we must be organized so that when the day comes each and all of us will know what is required of us, where we are to go and what is expected of us. We must be organized so that each and all of us can be utilized to the best of his ability and put in his proper place in accordance with his special training and qualifications—no more round pegs in square holes must occur as did in the World War. We will be the first branch of the service that must function immediately and efficiently on mobilization day. So my brothers in the profession, I call upon you to do your duty toward preparedness as you are now doing for your patients. The Medical profession has never failed the public in the performance of

duty in time of need. We have always manifested a spirit of desiring to correct mistakes when discovered. Let us now get busy and organize to the end that no mistakes made in the last war will be repeated in any future war. We all owe this much at least to our country and to our Flag. The work of Washington was not finished at Yorktown; the work of Lincoln was not completed at Appomattox. They live in our institutions, one in the Constitution which his efforts caused to be adopted, the other in the Amendments which his sacrifice caused to be ratified. Your work was not all done on the sea or on the fields of France.

L. T. HESS, Colonel, Med. Corps,
U. S. Army, Corps Area Surgeon.
Fort Hayes, Columbus, Ohio.

TREATMENT OF BITES BY RABID ANIMALS.

The recent issue of Health News, published by the New York State Department of Health, contains the most interesting bit of advice on the treatment of persons bitten by rabid animal or animals suspected of being rabid. The Health News further quotes Dr. Anna Williams as saying that nitric acid does not cause bad scarring.

Research carried on in the New York City Department of Health has conclusively shown that cauterization with *fuming nitric acid* is the best known methods. According to its *Weekly Bulletin* dated December 4, 1926, this method is helpful if used within 48 hours, but the earlier the better.

"The acid should be applied on the point of a tapered glassrod or drop by drop from a capillary pipette, so that the amount may be carefully controlled. Contact with bony, cartilaginous or bloodless parts should be avoided, if possible. To these parts apply pure carbolic acid and the fuming nitric acid to the other tissues adjacent. Such tissues heal well, after the use of nitric acid.

"The actual cautery is effective as far as it reaches the parts of the wound, but fuming nitric acid being a fluid reaches the deep crevices which the hot iron may not touch.

"Pure carbolic acid, iodine, silver nitrate etc., have but little value in the treatment of wound made by rabid animals, compared with fuming nitric acid."

New Measles Germ.—Although the pleomorphic gram-negative bacillus discovered by Thomson in the throats, conjunctiva and more especially in the skin rash of measles cases is very difficult to explain away, it did not give definite agglutination with the serum of convalescent measles cases, nor was there any positive complement fixation.

ORIGINAL ARTICLES

OSTEOMYELITIS, ACUTE AND CHRONIC, A STUDY OF FIFTY-EIGHT CASES.*

By CHAS C. GARR, M. D., F. A. C. S.
Lexington Clinic, Lexington.

I invite your attention to pyogenic infection of bone caused by metastasis through the blood stream from some focal point. I am leaving out of consideration in this discussion other types of bone necrosis, such as tuberculosis, syphilis, blastomycosis, typhoid osteitis, and necrosis due to extension from the soft parts.

Sixty per cent of the cases of acute osteomyelitis I have seen have been treated for rheumatism from two to ten days before surgical aid was sought. A lack of understanding of the nature of this malady plus the fact that it attacks a bone in the neighborhood of a joint is responsible for this. Attributing too much importance to a recent and slight traumatism is a frequent cause of diagnostic error.

A focus of invasion, such as furunculosis, blisters, abrasions, infected areas on hands or feet, slight burns, or sore throat, can be found in most cases.

The symptoms of acute osteomyelitis are sudden in onset. They are: local pain, which becomes worse, very little swelling, temperature 101 to 104; pulse 120 to 140, rise in local temperature, and the voluntary immobility of the part affected to avoid pain. After two days to a week with a continuation of the symptoms of onset, swelling, redness, and the evidence of acute inflammation, will appear. An examination of the patient is difficult on account of the very great pain and investigation of joint motion is denied by muscular rigidity. The leucocyte count is 18,000 to 25,000 with 85% to 95% polymorphonuclear count in nearly all cases. In one case of osteomyelitis of the right ilium with abscess in the iliac fossa I delayed operation one week on account of low leucocyte count and positive Widal reaction. So leucocytosis is not a one hundred per cent symptom.

There is no x-ray evidence in the first few days of the disease, and the surgeon who waits for x-ray findings does his patient a material damage. When the process has developed sufficiently, that is 6 or 7 days, for the x-ray to show necrosis or sequestration, the operation will disclose a much more extended area of disease than the shadowgraph discloses. To my mind, fever, marked leuco-

*Read before the Fayette County Medical Society, September 14, 1929.

cytosis, and extreme local tenderness over a limited area of bone is sufficient evidence for exploration.

There is not a unanimity of opinion among surgeons as to the exact location of the beginning of this pathology. For years we have been taught that the medulla of the bone received the infected embolus. In recent years it is believed by some that the cancellous tissue near a joint is first invaded and extension takes place along the cartilage to the cortex, pushing the periosteum away from the shaft and that the medulla is secondarily infected by extension through the Haversian canals. Having encountered the sub-periosteal abscess in several cases with no apparent medullary disease, I am led to believe this to be the means of extension.

There are some cases of acute osteomyelitis in which the bone infection is but one symptom of a graver condition, and that is septicemia. When the blood culture proves a bacteriemia, the prognosis is grave, multiple bone lesions are to be expected, as well as pneumonia, endocarditis and meningitis.

The femur is involved in 50% of all cases. In my own cases the tibia heads the list and the femur second.

Chronic osteomyelitis is nothing more than the results of an acute osteomyelitis. Nature separates the dead bone from the living, establishes sinuses through the skin and attempts to liquify the sequestrum. This process continues over a period of many months or years. The size of sequestra has never been satisfactorily explained. I do not know whether sequestration is a result of the medulla being bathed in pus or whether it is due to a thrombus of the nutrient artery. The size of the sequestra varies from small spicules of dead bone to long thin spatula like fragments many inches long.

In another type of chronic osteomyelitis we have a bone abscess surrounded by hard dense bone through which Nature is unable to bore a sinus. This is the Brodie type of abscess and usually contains sterile pus or that of very low virulence. It often is a remnant left over from bone disease many years before. As the destructive process has continued within the bone, the periosteum produces a new and denser bone on the surface so that these old cases show a marked thickening of the cortex, sometimes to twice its normal size.

The symptoms of chronic osteomyelitis are chiefly discharging sinuses, which gives pain when the sinus plugs, swelling, induration, and thickening of the cortex. The x-ray picture is of vast import in the chronic type as it will show the size and location of sequestra and the extent of bone destruction and bone proliferation. The patient usually shows the ef-

fect of long continued purulent infection and is anemic and often undernourished.

The prognosis is favorable in the acute cases in the absence of septicemia. In the chronic cases the prognosis is not grave as to life, but repeated operations are often necessary and the chief danger is embolism and extension into a joint. In my experience the mortality is 12% taking all cases—acute, chronic, and those with septicemia.

The chief symptoms of the Brodie abscess is the constant dull, boring pain localized in the affected bone. The roentgenogram discloses the area of necrosis surrounded by very dense bone.

The treatment is surgical. Early operation in the acute cases will limit the amount of bone destruction and the extension into a nearby joint. Some surgeons always lift the cortex off freely while others believe that a drainage of the periosteum should first be done and later open the medulla, if necessary. In my cases it always has been necessary to open the medulla at first or later and I believe that if pus is found under the periosteum, a part of the cortex should be removed at that time. I think early sub-periosteal excision of a long bone is contraindicated. The wound should be left wide open, packed with gauze and made to granulate from the bottom. In two cases of Brodie abscess I have tried to sterilize the cavity with carbolic acid and alcohol and effect a primary closure, but was not successful and packing was later resorted to. In the chronic cases all sequestra must be removed and the wound left open to heal from the bottom. Too early a removal of a large sequestrum will likely result in deformity and it is advisable to wait a few months to get the splinting effect of the dead bone while Nature molds the new about it.

Many surgeons now advocate the immobilization of the limb in Plaster-of-Paris after sequestrotomy and after packing the cavity with vaseline gauze strips, leaving the packing in for four to six weeks without change. I have tried this on two cases, but the odor forced me to change the dressings. I think immobilization is a factor in prompt healing.

An important element in the treatment is the prevention of deformities. Flexion of the thigh or leg can be controlled by the use of splints or extension. Horrible deformities may result in neglected cases from contracted muscles or through loss of bone or ankylosis of joints in bad position. It is often necessary to do a second or third operation before the infected bone will heal.

Between July 1, 1920 and July 1, 1926 I have treated 58 cases of osteomyelitis and the following data is taken from a study of this series. I have not included a number of cases of mandible necrosis due to extension of tooth

socket infection or those cases due to extension from soft tissue, such as bone felon, infected fingers and hands, or traumatism followed by infection.

There were 20 cases classified as acute osteomyelitis and 38 cases classified as chronic osteomyelitis.

In the acute cases the duration of symptoms varied from two days to four weeks. The age varied from 14 months to 67 years. Omitting two acute jaw cases, one of whom had septicemia, the average age was 13 plus years. Fifty per cent of the acute cases occurred before 15 years of age.

In the chronic cases the duration of symptoms varied from a few months to 53 years. The youngest patient with chronic osteomyelitis was 6 years of age with symptoms of five weeks duration. The oldest patient, who was 70 years of age, had a discharging sinus for 53 years.

In the 58 cases there were 69 bones involved. Fifty cases, or 86%, had pathology in but a single bone. Eight cases had multiple bony lesions involving 19 bones. Of the cases with multiple lesions, seven presented destruction in two bones each while in the eighth case five bones were involved. No two cases of multiple lesions were similar in the bones attacked. The seven two-bone cases were as follows:

1. Tibia and lower mandible.
2. Femur and ilium.
3. Clavicle and parietal.
4. Ulna and tibia.
5. Radius and ilium.
6. Tibia and phalanx of finger.
7. Clavicle and sternum.

In the last case I believe the sternum was involved by direct extension rather than by blood stream.

Tibia	20	Radius	3
Femur	10	Metacarpals	3
Ilium	5	Ulna	2
Fibula	4	Ischium	2
Clavicle	4	Ribs	2
Lower mandible ..	4	Metatarsals	1
Humerus	3	Parietal	1
Scapula	3	Sternum	1
Carp. phalanx	1		

Of the 58 cases tabulated 51 had surgical treatment as follows:

Sequestrotomy	28
Curettage with Drainage	17
Excision	3
Partial excision	2
Amputation	1

51

In three cases operation was refused and in one with septicemia operation was not advised. Two patients were practically healed when advice was sought and one with Brodie

abscess of twenty years' duration went away to think about an operation.

In the acute type of the disease six patients had septicemia as proven by blood culture. Three of the six died following operative intervention and one died without operative intervention. Two were cured. The other fourteen acute cases were cured or improved on leaving the hospital. Eight patients required a secondary operation.

In the chronic type one patient died two months after leaving hospital because of an invasion of the knee joint from the lower extremity of the femur. Amputation was advised in this man of 70 years, but it was refused. In 19 cases, or 50%, of the chronic types I have been able to state a cure was effected. Others have drifted away, returned to a distant home, or are still under treatment.

The mortality of the 58 cases in this series was 12%. The mortality in 51 cases, which had operation, was 7.8%. Omitting the cases complicated by septicemia there was but one death, which is a mortality of 1.9%.

The tibia was resected from upper to lower epiphysis in two cases.

One patient had a chronic osteomyelitis of the lower femur with abscess around the bone and in the popliteal space for two years without sinus formation. One patient nursed a sequestrum protruding from the anterior surface of the leg for six years before seeking surgical aid.

The incidence of sex was 33 males and 25 females; and the right and left sides of the body were equally involved.

Only one patient was a negro. Fifty-seven whites to one of color would indicate that hematogenous osteomyelitis is another disease to which the negro race is not readily susceptible.

In conclusion I beg to repeat that with a child suffering with pain in or near a joint and with fever and leucocytosis, in your consideration of rheumatism, think always of acute osteomyelitis and not wait for positive x-ray findings.

Carcinoma of Cervix: Prognosis.—Personal study of many hundred sections leads Plaut to the conclusion that there is no reliable basis for a histologic prognosis in cervical carcinoma. The histologic picture of cancer of the cervix does not permit the establishing of well defined groups according to the type of cancer cell. The constitutional factors must be considered in determining prognosis. The influence of age must be studied anew, since the existing data are unsatisfactory. The clinical classification of carcinoma of the uterine cervix is still the best aid in making a prognosis.

EVOLUTION OF THE PATHOGENESIS OF SYMPATHETIC OPHTHALMIA WITH REPORT OF AN UNUSUAL CASE*

By ADOLPH O. PFINGST, Louisville.

It is an interesting and almost incomprehensible fact that the medical profession of earlier days did not recognize sympathetic ophthalmia as a clinical entity as we do today, when we consider the many references of the earlier writers, as far back as the 16th century, to cases in which an injury to one eye or an operation was followed by involvement of the other and subsequent blindness. Sympathetic ophthalmia was first described in a definite way by Mackenzie in 1840 (1). It is true that even today there exists some doubt whether the iridocyclitis which occurs in an eye secondary to an injury or disease in the other can, strictly speaking, be attributed to the inflammatory process in the injured eye, for we know that no form of cyclitis is typical of sympathetic ophthalmia and that the microscopic changes found in tubercular cyclitis are practically identical with those most frequently seen in sympathetic inflammation. The profession is wont to accept the observation of Fuchs that a dense infiltration of lymphocytes takes place in the uvea of the exciting eye, the cells being largely grouped in nodules along the course of the blood vessels and that in some instances epithelioid cells and giant cells are present. Fuchs, who also speaks of this as a proliferative uveitis and does not regard a fibro-plastic process as essential to the disease, assumes that the pathological changes in the sympathizing eye are identical with those found in the exciting eye.

The question of the association between the exciting and the sympathizing eye has been the subject of much conjecture and research and yet remains an unsolved problem. Based upon the direct anatomical connection between the two eyes by way of the optic nerves and commissure it was perhaps a natural inference on the part of Mackenzie that the inflammation extended by continuity of structure from one eye to the other. However, Mackenzie also suggested the possibility of the transmission of the inflammation by way of the blood stream or through the ciliary nerves. The hypothesis of transmission by continuity along the optic nerve tract was soon abandoned as the observation was made that sympathetic inflammations do not begin with the clinical picture of an optic neuritis but that they always involve the ciliary region primarily.

Many theories regarding the paths by

which sympathetic ophthalmia is transmitted have been promulgated since Mackenzie's time. The first of these to receive consideration was the hypothesis propounded by Muelier (2) that an irritant was transmitted from eye to eye through the ciliary nerves and that this irritation finally culminated in a true inflammatory process. Laboratory research failed to uphold this theory, microscopic examinations of the ciliary nerves revealing no pathology along the course of the nerves. The anatomical fact that the ciliary nerves are in no way directly connected would hardly uphold the theory of a direct extension of the inflammation along the nerves but would rather suggest in the irritation of the sympathizing eye the manifestation of a reflex act. Clinical observations would also not uphold the ciliary nerve theory inasmuch as there have been many instances of prolonged and severe ciliary inflammation in one eye which was not associated with involvement of the other eye, and conversely cases with little or no reaction in the injured eye have been associated with sympathetic involvement of the other eye in numerous instances, even after removal of the injured eye. Nevertheless, the ciliary nerve theory held sway until the advent of bacteriology in 1880 when various mycotic theories were advanced.

Berlin (3) was the first to suggest that infectious micro-organisms of one eye find their way through the blood stream into the sympathizing eye without effecting the rest of the body, where conditions favorable to their development exist. The idea that sympathetic ophthalmia is an infectious disease led to much laboratory and animal experimentation. One theory superseded another. Leber (4) suggested an extension along the optic nerve or its sheath. This hypothesis of bacterial migration along the nerve was worked out thoroughly by Deutschman (5) and hence is known as the Deutschman theory. Deutschman was able, by injecting bacteria of several species (*bacillus fumigatus-staphylococcus aureus*) into the vitreous of one eye, to create an inflammation in the other eye. While Deutschman had many followers, his views were not altogether convincing. Many observers, among them Schirmer, Sattler, Greeff and others, were unable to corroborate the bacterial migration theory. In fact, it was demonstrated that the injection of irritating chemicals into the vitreous or into the vaginal sheath would bring about a similar reaction as followed bacterial injections. In the few instances in which microscopic examination of the optic nerve of the sympathizing eye could be made it was observed that pathological changes of the nerve diminished the further backward one went, rather than increasing as one would expect to find it with the in-

*Read before the Eye, Ear, Nose and Throat Section of the Kentucky State Medical Association, Frankfort, Ky., September 21, 1926.

flammatory process coming from behind.

Greeff (6) found that attempted cultures from a resected piece of optic nerve taken from an eye affected with sympathetic ophthalmia remained sterile. The clinical observation that in cases where the optic nerve was severed from the eyeball at the time of the original injury sympathetic ophthalmitis followed in the other eye would not conform to the theory of bacterial extension along the optic nerve. The failure of panophthalmitis to cause sympathetic ophthalmia was also offered as evidence contradictory to bacterial extension.

A modified ciliary nerve theory promulgated by Schmidt-Rimpler (7) soon after Deutschman's migration theory, also had many adherents. It assumed a vasomotor and metabolic disturbance in the uveal tract of the sympathizing eye, resulting from impulses through the ciliary nerves, which predisposed this area to bacterial invasion by way of the circulation. At the time the theory seemed tenable because sympathetic ophthalmia occurred after resection of the optic nerves and because the anterior segment of the eye was always the first to be affected in sympathetic ophthalmia. However, the cases in which sympathetic ophthalmia occurs some time after removal of the exciting eye would rather refute the theory.

Another theory, which had some adherents was advanced by Motais in 1904 (8) Motais believed that bacterial transmission took place through the veins by virtue of the anastomoses of the veins of the orbits in the nose, and saw in the absence of valves in the veins of these parts a probability of this avenue of communication. There is no clinical evidence to support this view.

The Deutschman hypothesis was generally popular until Roemer (9) in 1903 advanced the idea of metastatic bacterial invasion. Roemer believed that during the inflammation of the primary eye some of the micro-organisms enter the general circulation and by some peculiar power of selection become deposited in the sympathizing eye, causing a metastatic inflammation. He believed that the micro-organisms reach the other eye early in the course of the cyclitis of the injured eye and that they remain dormant for weeks before creating an inflammatory reaction, and saw in this the explanation of the cases in which the sympathizing eye did not become involved for some time after enucleation of the offending eye.

Recent developments would indicate that the bacterial origin of sympathetic ophthalmia is open to question. It fails to explain sympathetic ophthalmia resulting from non infectious disorders of the eye, such as intra-ocular trauma with sterile objects, subcon-

junctival ruptures and degenerating intra-ocular sarcoma.

The inability to demonstrate bacteria in the sympathizing eye led Bellmanarinoff to the conclusion that toxins liberated in the primary eye find their way along the optic nerve to the other eye and cause the ophthalmia.

Meller (10) is credited as the first to offer, as a complete departure from all of the cited theories of ectogenous origin of sympathetic ophthalmia, the hypothesis that there is some hidden endogenous cause for the disease. He believed that some micro-organism, probably of ultra-microscopic size, with a special affinity for the uveal structures of the eye, has its port of entry into the body elsewhere than in the eye, possibly through lesions of the skin or through some of the mucous membranes, and that it first attacks the diseased or injured eye with its supposedly lower resistance, and finally by way of metastasis reaches the other eye. He saw in this theory an explanation of the cases occurring without a perforating injury to the exciting eye, such as sarcoma of the choroid and in subconjunctival rupture of the sclera.

Golovine (11), in 1905, offered an entirely new hypothesis in regard to the cause of sympathetic ophthalmia in direct contrast to the mycotic idea. He believed that when the uveal tract is injured or inflamed degenerative changes occur in the epithelium which liberates substances which he called cytotoxins. He assumed that this auto-cytogen reaches the sympathizing eye through the blood stream where it displays a peculiar affinity for the uveal tract of the sympathizing eye and there sets up a uveal inflammation. It was found that emulsions made of the inflamed eye and injected into the other eye brought about a fibrino-serous inflammation of the iris but not a real sympathetic ophthalmia. The experiments of Golovine were confirmed by Brown Pusey (12) LaPlay (13) and others. As in all of the other theories objections were offered to this idea. Schirmer, for instance, called attention to the fact that noxious elements anywhere in the body after removal of the primary focus of infection, gradually diminish in toxicity, hence he saw in the cases of sympathetic ophthalmia which develop some time after removal of the injured eye and those cases of recurrent exacerbations in the sympathizing eye for months after removal of the offending eye marked evidence contradicting this hypothesis.

Harbridge (14) in his thesis also subscribed to the view that the causative noxious agent of sympathetic ophthalmia pre-exists in the body. He believes, like Meller, that injury to the ciliary regions in the offending eye

merely prepares a fertile soil for these toxic elements and that the resulting toxins find conditions in the fellow eye favorable for their development. He sees in the frequent relapse of the inflammation in the sympathizing eye long after enucleation of the offending eye evidence that there are contributory foci of infection in the body. With our increasing knowledge of the relation between foci of infection and a variety of bodily affections the etiological possibility of focal infection in sympathetic ophthalmia has naturally been considered. Auto-intoxication, especially from the lower bowel, has also been considered as an etiological or at least as a contributory factor in sympathetic ophthalmia.

The latest theory regarding sympathetic ophthalmia was advanced in 1910 by Elschnig (15) who saw in sympathetic ophthalmia an anaphylactic phenomenon. He assumed that some portion of the disintegrated uvea of the exciting eye enters the circulation and creates a hypersensitivity of the body, more especially of homologous structures in the uvea of the other eye. He further assumed that as absorption from the disintegrated uvea continues intoxication of the sensitized uvea of the sympathizing eye takes place and manifests itself clinically as uveitis. He maintained that the chief role in the process was taken by the uveal pigment. Elschnig, in explaining the involvement of the sympathizing eye, assumed some anomalous condition of the body as auto-intoxication from the alimentary tract, diabetes, nephritis, etc, with consequent lowered resistance as a contributory factor of the disease. He supported his theory with animal experimentation, based upon compliment fixation or the latent period of two weeks or longer elapsing between the receipt of the injury and the outbreak of the inflammation in the other eye far better than any other hypothesis. It can also be accepted regardless of whether the disturbance in the exciting eye resulted from bacterial infection or from other causes. The theory of Elschnig met with as much criticism as have all of the previous hypotheses.

Gifford (16) who has given the question of sympathetic ophthalmia much thought and study, does not look upon the anaphylactic theory with much favor. Among other objections he points out that anaphylactic manifestations are generally sudden in their onset, and that they differ in this from the usual course of sympathetic ophthalmia. He also believes that if sympathetic ophthalmia can be explained on the anaphylactic theory we should expect sympathetic ophthalmia from other chronic eye diseases and injuries of the uveal pigment without penetrating wounds. Gifford points out that the assump-

tion of Elschnig that a lowered resistance of the body is essential to the occurrence of sympathetic ophthalmia is controverted by the frequent occurrence of the disease in individuals otherwise healthy.

Perhaps no one has done as much research work in an endeavor to substantiate the theory of Elschnig and to further the study of the pathogenesis of sympathetic ophthalmia as Alan C. Wood of Baltimore. He was able to confirm in a general way Elschnig's experiments. He also demonstrated that by injecting dogs with uveal pigment an ocular sensitization to the pigment could be established. He was able by injecting uveal pigment in the vitreous of dogs eyes, and then two weeks later by giving a large peritoneal injection of the same substance, to bring about an iridocyclitis in the other eye. Notwithstanding these observations Wood is not ready to accept fully the assumption that the disease is an anaphylactic manifestation. I would quote from his address before the International Congress of Ophthalmology in London last year (17) in which he said that "it does not appear reasonably certain that there is commonly an allergic phase in sympathetic ophthalmia, yet it is far from certain that this is the only phase of this mysterious disease. It is quite possible that other utterly unknown factors may play an important role in its outbreak."

I would submit the following unusual case: A trained nurse, female, married, aged 36, weight 200 pounds, and to all outward appearance in perfect health, consulted me on July 12, 1924. The history was elicited that on July 5th, while in the act of removing a tray of instruments from the sterilizer, a tube of catgut which was among the instruments exploded projecting something, presumably glass, into her left eye. She was seen immediately by a competent general surgeon from whom I obtained the history that he found a corneal wound of the left eye and some blood in the anterior chamber, but no prolapse of the iris. A sterile dressing was applied, and atropine was instilled. As it was uncertain whether or not a foreign body had penetrated the eye the patient was kept under observation. On July 11th, when the patient for the first time complained of pain, she was sent to the city for treatment. When I saw her I could elicit no further history than that obtained from her physician, except that she had lost the vision of the injured eye at the time of the accident.

Patient gave a personal history of having had measles, and mumps during childhood, a miscarriage in 1906 with resulting pus tubes which were removed in 1918. She had never had any trouble with her eyes.

Her father is 53 years old and in good

health; mother died of pulmonary tuberculosis at 35 years. There are four brothers and three sisters, all in good health.

Examination on July 12th revealed a wound in the left cornea, extending from the lower pupillary margin downward and outward (at "4 o'clock"). The pupil was drawn downward, the iris against the corneal wound which had united. There was no prolapse of the iris. The anterior chamber had reestablished, but was shallow, the iris being pushed forward by the swollen cataractous lens. There was considerable pericorneal injection, and the pupil was moderately wide. Tension taken by palpation seemed slightly increased. X-ray examination was negative. Patient could recognize movements of the hand and had rapid and accurate projection. The right eye was normal, V 20-15.

General physical examination revealed no abnormality. Blood Wassermann negative; urine normal.

On July 12th the swollen lens was extracted in the hope of finding a foreign body and relieving pain. The lens contained no foreign body and respite from pain lasted only 24 hours. The eye was then enucleated (July 5th). Quite a large piece of thin glass was found in the vitreous chamber just behind the lens and ciliary body. The eye was preserved in three per cent formalin solution. The patient made an uninterrupted recovery. When she left the infirmary five days later after the operation the right eye was apparently normal in every way.

Microscopic examination of the enucleated eye (made after the other eye became involved) revealed a proliferative uveitis. There was a marked infiltration of the choroid and ciliary body with mononuclear lymphocytes and a slight infiltration of the retina. No giant cells or karyokinetic figures were found.

On August 11th, during my absence from the city, the patient returned and was seen by the late Dr. Isaac A. Lederman. From Dr. Lederman's records I note that the patient gave the history of having had no discomfort after reaching home until a week before she returned, which was just three weeks after enucleation of the injured eye. At that time the right eye became sensitive to light and since then she experience ' an almost constant dull ache in the eye and an occasional throbbing pain. Her vision had rapidly grown defective until she could hardly recognize people. Examination by Dr. Lederman showed marked pericorneal redness, numerous white deposits on Descemet's membrane. The iris was discolored, its anterior surface irregular. The pupil was narrow and responded slightly and irregularly to instillations of 1 per cent atropine. The vitreous was hazy—fundus not

visible. The eyeball was soft and tender to palpation. Vision was reduced to 5-200 central and 20-200 excentric. Differential blood count showed normal relation of red and white cells. No increase in eosinophile cells. Diagnosis of sympathetic ophthalmia was made and treatment instituted. This consisted in purgation, followed by large doses of salicylate of soda, and later injections of mercury. She was also given milk injections. Locally, atropine and hot applications were given. The case went from bad to worse and when I returned from my vacation on September 6th I found a closed pupil with cataractous lens, iris retracted at the periphery, and tension reduced. She could still count fingers at six feet. At present she has only a perception of light with slow projection.

While my contribution offers nothing original regarding the pathogenesis of sympathetic ophthalmia, I felt that the included case should be recorded on account of its two unusual features, viz: the injury of the exciting eye with a foreign body known to be sterile and the occurrence of the sympathetic inflammation three weeks after the injured eye was enucleated. As far as I could determine from the literature a case in which the injury to the exciting eye was caused by a foreign body known to be sterile has never been recorded. Schirmer in his essay on sympathetic ophthalmia expressed the belief that the disease could not follow an injury with a sterile foreign body. Although the possibility of the entrance of some infectious element at the time of the injury or subsequently could not be positively excluded, the case would seem to indicate that the exciting cause of the sympathetic inflammation pre-existed either in the injured eye or elsewhere in the body. We know that the occurrence of sympathetic inflammation at a variable time after enucleation of the injured eye is rather infrequent, yet we find quite a number of such cases on record. While I would not venture an opinion as to the significance of these delayed cases, advocates of the anaphylactic theory regarding the relation between the injured and the sympathetic eye are wont to see in these cases evidences substantiating this theory.

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DISCUSSION

Frank Pirkey, Louisville: Dr. Pfingst has certainly given us a splendid resume of existing theories concerning the pathogenesis of sympathetic ophthalmia. Unfortunately we yet know very little about the actual causes of sympathetic ophthalmia. There are a great number of theories, some of which seem to explain the origin of certain cases, but others they do not explain.

I heard Fuchs lecture on this subject several years ago. He was then inclined to accept the bacterial theory. He described the condition found in eyes enucleated during infection. Examination showed the presence of degenerated areas, plasma cells, epithelial cells, bacteria, etc. As he also found similar conditions in the sympathetic eye on two occasions, he reasoned that the same organism was responsible for both infections, and suggested it was probably one similar to the tubercle bacillus which does not excite active inflammation but acts slowly. He was unable at the time to explain how infection reached the other eye.

It seems rather easy to explain on the infectious theory the sympathetic ophthalmia occurring within one to three years after injury, but based upon any of the prevailing theories it is difficult to explain how infection in the sympathizing eye can occur many years afterward. I recently had under observation a woman with sympathetic ophthalmia who received an injury to her eye in 1883, and the eye originally injured had not been removed. Such cases are fairly common. How bacterial infection can remain in the body that long without causing trouble, or how anaphylaxis can act as a causative factor in such cases, it is difficult to understand.

About all we are justified in saying based upon the present state of our knowledge is that we must recognize the fact that sympathetic may develop under a great variety of circumstances, that it occurs most frequently following perforated wounds of the eye especially those involving the ciliary body; and that despite the observance of all known precautions at time of the injury, we may be unable to prevent the development of sympathetic ophthalmia. We must simply realize that we do not know the cause of sympathetic ophthalmia, and therefore must make the best use we can of what knowledge we have concerning it.

John O. McReynolds, Dallas, Texas: There could be no subject of greater interest than the pathogenesis of sympathetic ophthalmia which has been so ably presented by Dr. Pfingst. The records show that in very few instances has the disease been dependent upon retained foreign bodies; nearly all cases have been due to punctured wounds which for the most part had healed promptly.

In preparing a paper for the Buffalo (New York) meeting of the American Academy of

Ophthalmology and Otolaryngology, I addressed communications to more than one hundred leading ophthalmologists in this country and abroad requesting their views as to the actual causative factor in sympathetic ophthalmia, but succeeded in securing little information of importance. Elschnig presented at that meeting his theory as to the cause of sympathetic ophthalmia, with lantern slide illustrations.

I agree with Dr. Pfingst that we have yet no proven facts regarding the actual cause of sympathetic ophthalmia, but there are some things which seem to have a bearing on its origin. For example, it has been suggested that it may be due to an organism somewhat similar to the tetanus bacillus. The organism has a period of incubation that is different, but has a selective affinity for certain kinds of tissue and is persistent in its action like the organism of tetanus. For the most part it has been found in clean wounds and not in suppurative wounds. I am quite sure that Harold Gifford has given the world a clue to the origin of sympathetic ophthalmia in his suggestions regarding its management.

I agree that it is difficult to understand how cases can develop after a long number of years. Gifford, and doubtless all of us, have cured cases of sympathetic ophthalmia by religiously following the treatment he has recommended.

Personally I have seen only one case of sympathetic ophthalmia after cataract extraction, performed by a colleague, followed by a needling. I have seen one case in which sympathetic ophthalmia followed a well devised and perfected executed operation for glaucoma.

Samuel G. Dabney, Louisville: Through the courtesy of Dr. Pfingst I had the opportunity of seeing the case he has reported, on the occasion of her first visit here. Dr. Pfingst asked me then whether I agreed with him that removal of the cataractous lens of the injured eye was worth trying. I agreed perfectly with his judgment that it was. I did not see the patient after that time as I was out of the city. We are told by Dr. Pfingst that enucleation of the eye became necessary twelve days after the injury, and sympathetic ophthalmia in the other eye started three weeks after enucleation. I think the great majority of us would feel that we were well within the bounds of safety if we removed an injured eye within twelve days after reception of an injury. I think it is very exceptional for sympathetic ophthalmia to develop in the other eye when the injured eye is removed within twelve days after injury. I confess that, in the case Dr. Pfingst has reported, I would have given a favorable prognosis as to the other eye. If I were to remove an eye twelve days after injury, I would be disposed to say that it was not absolutely impossible but very improbable that the other eye would become involved in sympathetic ophthalmia.

The point that impresses me most in the de-

velopment of sympathetic ophthalmia is the overwhelming number of cases in which the eye has been opened by the injury or by operation. Of course, I am aware of the fact that cases have been reported where tumors within the eyeball were present prior to the development of sympathetic ophthalmia. In these cases tumors of the eyeball produce iridocyclitis with shrinkage of the eyeball and not the usual sequence of glaucoma. I am under the impression that cases are rare in which sympathetic ophthalmia is due to tumors. I have sometimes wondered whether in these rare cases the disease in the other eye was truly sympathetic and if perhaps the growth had made a minute opening in the eyeball. An overwhelming number of sympathetic ophthalmias follow perforating wounds, and I have wondered whether it is not always necessary for a perforation to occur. If we could establish the necessity of perforation in these cases it would seem to me a very strong argument in favor of the bacterial origin of the disease.

I have greatly enjoyed Dr. Pfingst's paper and hope the constant investigations that are being made will finally give us more positive data than at present obtains.

J. A. Stucky, Lexington: I wish Dr. Pfingst would tell us in closing whether in his judgment immediate enucleation is indicated where the roentgen-ray reveals a foreign body in the eye. My reason for asking this is that patients are sometimes referred to us with old eye troubles by the Compensation Board, with indications of long-standing plastic iritis, etc., where there is slight irritation of the opposite eye and the workmen claim they were recently injured by being struck in the eye by some object. I recall two such instances where roentgen-ray examination disclosed a foreign body in the eye. In one according to history obtained from the patient, the foreign body had remained in the eye four or five years, and in the other eleven or twelve years. In both there was some irritation of the other eye, but not enough to justify the diagnosis of sympathetic ophthalmia, and enucleation was not advised. What was eventually done about the injured eye I do not know, except that in one case the eye still remains in situ and four or five years have now elapsed. If I mistake not Ayers, Williams, Knapp, Sr. and many others recommend enucleation under circumstances such as I have related where there is any irritation of the opposite eye.

I recall some years ago having referred a patient with obscure ocular trouble to Dr. Ayers and Dr. William Cheatham, of Louisville. There was a contracted globe, but the patient had one of the largest eyes I have ever seen, and there was decided irritation of the other eye. Both consultants advised enucleation which was done. The condition appeared to be one of glaucoma with beginning atrophy, but I did not know exactly what it was. After enucleation of the eye under water revealed total calcification of the

choroid, the first and only one I had seen. I have observed a few cases in which there was partial calcification.

I would like to know if Dr. Pfingst would recommend enucleation in all cases where the roentgen-ray shows a foreign body in the eye, without any complaint of pain in the injured eye, and with no positive symptoms of sympathetic ophthalmia in the other eye.

J. G. Carpenter, Stanford: I can add nothing to what Dr. Pfingst has said in regard to the pathogenesis of sympathetic ophthalmia, but a few personal experiences may be of interest.

I saw a man of 50, who, when 15 years old, received a knife wound of his right eye. This was followed by shrinkage of the globe and later the formation of a cataract. When he was 50 years old sympathetic ophthalmia developed in the opposite eye with great pain and mental observation present. I performed abscission and evisceration of the right eyeball. The patient recovered, the vision of the left eye was saved and has remained good. Examination of the enucleated eye showed that the lens had undergone calcareous degeneration. Six weeks after the operation this man went squirrel hunting and brought home a dozen squirrels. He had an artificial eye to match the good eye, with as perfect rotation of the artificial eye as in the good one.

Several years ago I saw a negress with trachoma who had a staphyloma of the left eye which had become blind. The blind eye was anucleated and trachoma of the right eye treated and cured. She recovered and vision in the remaining eye is good.

A man of 35 came to me saying "he had something growing in his right eye." After examination I made the clinical diagnosis of sarcoma. He had decided symptoms of sympathetic ophthalmia in the other eye. The diseased eye was enucleated and he has since enjoyed freedom from symptoms of sympathetic ophthalmia with good vision in the remaining eye.

These are merely some of the things that happen in the daily life of a country doctor.

D. M. Griffith, Owensboro: I have greatly enjoyed the splendid paper presented by Dr. Pfingst. There is only one feature I desire to mention, and that is to inquire whether there is any relationship between the mysterious disease which we call sympathetic ophthalmia, and that equally mysterious disease, cancer? What part does irritation alone play as an exciting cause in the production of sympathetic ophthalmia?

We know that in the majority of instances cancer, particularly of the female breast, cervix uteri, etc., is preceded by irritation, although the disease may not actually manifest itself for many years.

In sympathetic ophthalmia, since the uveal tract seems to be the area primarily involved, is it not possible that irritation of this tract may act as an excitant in the production of this condition?

Adolph O. Pfingst, Louisville (in closing): I have been very much pleased with the discussion of my paper and appreciate it.

Many animal experiments have been made in trying to solve the problem of sympathetic ophthalmia. However, thus far animal experiments have furnished no reliable data.

As to the influences of syphilis: We know that lues may cause various ocular diseases, and that syphilis and sympathetic ophthalmia may coexist in an individual. I believe syphilis merely acts in lessening vital resistance and not as a specific cause of sympathetic inflammation. Blood cultures have been uniformly negative for bacterial life in cases of sympathetic ophthalmitis.

Regarding sympathetic irritation as an indication for enucleation: Some years ago I thought irritation of the other eye was always an indication for enucleation of the injured eye, but I have changed my mind about this. Sympathetic irritation may occur in various simple affections of the eye, even in ordinary conjunctivitis. I do not believe we are justified in recommending enucleation of the injured eye just because of a slight irritation of the other eye.

It is unfortunate that we know so little about the pathology and bacteriology of this condition. It is true there is a great similarity in the microscopic findings of sympathetic ophthalmia and disease of the uveal tract due to tubercular infection. We have nothing definite by which to judge whether the uveitis in a given case is really sympathetic ophthalmia. The general accepted idea of sympathetic ophthalmia is that we have in the first an injured eye and inflammation that is associated with great infiltration of lymphocytes along the blood vessels, often in nodular formations, and that the changes in the sympathizing eye are identical with these.

As to bacterial origin of the disease: It is possible that the cause for sympathetic uveitis is an ultra-microscopic organism which has not yet been found. The more frequent occurrence of sympathetic ophthalmia before the advent of bacteriology and aseptic surgery rather argues in favor of the bacterial origin of the disease.

In reply to Dr. Stucky, I would say that I would unhesitatingly remove an eye with an unremovable foreign body in the presence of pain or inflammation, even though the other eye were entirely normal. In cases where the foreign body is fixed and the eye quiet I believe that we would be justifiable in advising against enucleation, especially if the eye were not blind, provided the case could be kept under observation. Encysted foreign bodies have been known to remain dormant and harmless for many years.

I was surprised that no one spoke to that feature in my case of the development of the sympathetic inflammation three weeks after enucleation of the injured eye. Cases of this kind have been recorded, but they are uncommon. This

late occurrence after removal of the injured eye hardly seems to bear out a bacterial extension to the other eye.

SYMPOSIUM ON PARA NASAL SINUSES THE SYMPTOMS AND DIAGNOSIS OF ACCESSORY SINUS DISEASE.*

By S. B. MARKS, M. D., F. A. C. S.
Lexington.

Since virtually all symptoms of accessory sinus disease are, to a lesser or greater degree, common to all, it has been deemed wise to study these symptoms comparatively, particularizing upon special points and procedures for each sinus.

The one symptom which oftenest presents itself of chiefest importance to the patient is pain or headache. The pain of acute frontal sinus disease varies from the severe almost unbearable pain or feeling of pressure in the region of the involved sinus, when there is obstruction to any retained secretion, to a mild dull ache or sense of pressure where drainage is free. This pain often radiates to the whole side of the head upon the involved side, to the opposite frontal region, or the eye ball.

Of whatever character the pain is usually much more intense one or two hours after rising and lasting from four to eight hours or longer. Where drainage is obstructed it may persist for the entire twenty-four hours. The pain is made worse upon exertion, mental or physical, upon leaning over and often upon overeating and using alcohol and tobacco.

Not infrequently the patient complains of dizziness and vomiting during the height of the headaches. There is also often mentioned a swelling over the sinus and in the eyelids.

The headache of chronic frontal sinus disease is universally present, nearly always confined to the region of the affected sinus, and usually occurs only for six or eight hours in the middle of the day. In the presence of acute exacerbations it assumes the characters of that of an acute condition.

The pain of the so-called vacuum frontal sinus is similar to that of chronic disease, being caused by a simple block to the sinus outlet from any cause.

One occasionally finds the pain of any frontal sinus condition assuming the character of a supraorbital neuralgia, due to the close relation of the sinus to this nerve.

The headaches of acute ethmoid disease may assume the character of an acute frontal sinus infection though rarely so severe, which is described as being between the eyes, at the root of the nose, back of the eyes, in the tem-

*Read before the Eye, Ear, Nose and Throat Section of the Kentucky State Medical Association, Frankfort, Ky., September 21, 1926.

ple, or it may involve the whole side of the face. The most characteristic site is at the root of the nose being described more often as a pressure, which varies in intensity, as to whether the drainage is free or not.

Headache of anterior ethmoid origin is almost entirely confined to the acute infections or to exacerbations of a chronic condition, there being little or no headache in chronic ethmoid disease unless some cell or the outlet to the frontal sinus is obstructed by resultant changes.

Pain in maxillary sinus disease even in acute conditions, is not constant in its appearance nor is its location so characteristic as in frontal or even ethmoid disease. When pain is present it may be referred to the sinus itself as a feeling of pressure and pain of varying intensities which may or may not radiate to one or more of the upper teeth. The most characteristic headaches of disease of this sinus is referred above the brow upon the same side, being as a rule higher than that of frontal sinus disease and is most consistently found in chronic empyema.

Quite often the pain of maxillary disease acute or chronic, is masked by a toothache or by the pain of an adjacent sinus which is diseased.

Because of the close anatomical and pathological relation of the posterior ethmoid and sphenoid sinuses, they will for the sake of clarity be grouped together.

Headache, in either acute or chronic disease of these sinuses, is not a constant symptom and when present often lends great difficulty to its proper interpretation. When present in acute infections it is usually temporal or behind the eyes being often referred to the vertex or the occiput or to both locations.

Such pains may be very intense, is made worse upon change of posture such as lying down or leaning over and many times is accompanied by dizziness and vomiting rendering the patient unfit for mental or physical exertion of any great degree. Here again the pain may involve the whole side of the face and head.

The characteristics of acute posterior ethmoid and sphenoid headache are very often confused with that of other acutely infected sinuses as such infection so often is in the presence of an acute pan-sinusitis.

Headaches in chronic posterior ethmoid disease are rare as an entity and is usually involved with that of adjacent structures, caused by pressure and extension; but that of chronic sphenoid disease is most varied in its ramifications due to the frequent association of neuralgia referred from the sphenopalatine ganglion which lying upon the anterior wall of the sphenoid sinus and being enclosed

in a bony cavity subjects all of its sensory and sympathetic branches of distribution to infection and neuritis causing pain over the mastoid region, (about an inch posterior to it in most cases) and to the cervical plexus in its distribution to the neck and to the upper extremity.

Ordinarily the typical chronic sphenoid headache is at the occiput and is referred to the side of the head and to a rather small area upon the vertex; which areas are frequently tender to touch or pressure. Sphenoid headaches is often of a nocturnal character and is usually made worse upon lying down and quite frequently disappears soon after the erect posture is assumed.

Tenderness is usually present in frontal sinus diseases, acute or chronic, and is most marked just behind the supraorbital margin particularly in the region of the pulley for the superior oblique muscle, the bone of the sinus floor being much thinner than the anterior surface, although tenderness is sometimes found over this surface where the bone is not thick; this is best brought out by finger percussion. The lachrymal bone in quite often a point for tenderness, which site is not unusually tender in acute ethmoid infections where the anterior or lachrymal cells are well developed.

Tenderness of maxillary sinus disease, rarely present in chronic conditions, is most frequent beneath the cheek over the thin bone of the canine fossa where the soft parts may be swollen. Tenderness over the sinus through the cheek is rarely found.

No areas of tenderness are found in posterior ethmoid and sphenoid disease except sensitiveness in the scalp over certain headache sites.

The next most prominent of sinus disease is the discharge of pus, muco-pus or mucus and in some instances of serum or other watery exudate.

The problem in any supporting condition, acute (including exacerbations) or chronic, is an exact determination of the sinus from which such discharge emanates. The patient's story is often valuable for as a rule the discharge from the frontal and anterior ethmoid sinuses is blown out into a handkerchief, but this is not always the case as many times the structure of the middle turbinate, the presence of anterior nasal blockage or polyps or other mucous membrane hypertrophies causing a blockage at the anterior lip of the hiatus semilunaris will divert the flow posteriorly and the bulk of the discharge will be hawked and expectorated. Again the discharge of an empyema of the antrum, quite frequently, or that of posterior ethmoid or even sphenoid suppuration, though rarely, will find its way forward and be blown out instead of accum-

ulating or dropping posteriorly to be expectorated. All have seen cases of antral empyema where the patient will use fifteen to twenty handkerchiefs daily to care for it.

The character of the pus, usually muco-pus, varies in color from yellow or greenish yellow, often pink in acute frontal and ethmoid cases, to the well known brownish color so often found in the maxillary antrum; while many times in chronic conditions it is of a thin or even quite coarse granular character. Early in acute conditions the discharge may be serous and in chronic conditions it may be a thin glairy mucus. In many instances of chronic hyperplasia, especially of the posterior group, it will be thin, watery and acrid.

Upon rhinoscopic examination, where vision and drainage are unimpaired, the source of the discharge in frontal sinus disease is readily apparent being found well forward in the middle meatus and high in the infundibulum, drying in a thin layer over the edge of the middle turbinate, being only confused with that from the infundibular cells of the ethmoid. Where such discharge is found under good vision by wiping it away its source is readily seen and it only remains to exclude or include other sinuses. The same can be said for the anterior ethmoid where under ideal conditions the discharge when profuse, bathing the middle meatus about the hiatus and the middle turbinate and often driving about the anterior half of this body. Here again by careful wiping and study, with the assistance of the probe and suction the source of the discharge is easily discovered.

Where the nose is narrow or partially blocked by polyps, mucous membrane hypertrophies or a large polypoid or cystic middle turbinate or a defected septum, the problem assumes great difficulties and the source of the secretion can only be found by careful shrinking, washing and probing and often some operative procedures must be resorted to, as removal of polyps and hypertrophies, breaking and shoving the middle turbinate over against the septum, opening and exenterating those cells blocking the hiatus anteriorly or the infundibulum and possibly a resection of the septum, before one can determine if the disease is of the frontal or anterior ethmoid.

* One of the easiest ways to get a good view is, of course, the removal of a portion of the middle turbinate bone, but this should be postponed until the before mentioned expedients are tried, for even though very often this procedure will arrest the condition, in a very few years in many cases hypertrophies of the uncinate process and the ethmoid bulla will cause a recurrence of the infection and one will wish for the presence of the middle turbinate.

Many times our labors will be rewarded by

finding an involvement of both the frontal and anterior ethmoid and antrum as well. Packing the middle meatus with cotton soaked in argyrol followed by suction will be found of great assistance in reaching a diagnosis especially when preceded by a thorough nasal lavage. One is often surprised at the large amount of secretion coming from the frontal and large ethmoid cells and the rapidity with which it is re-secreted and unless painstaking methods are used a mistaken diagnosis will be made.

Fortunately, as it is so frequently the seat of disease, both acute and chronic, the maxillary sinus due to its anatomy and its location lends itself readily to special methods of diagnosis. The history is most valuable being that so often of the persistence of an upper respiratory infection or following an abscessed tooth; or a persisting nasal or postnasal discharge with repeated coryzas and not infrequently associated with considerable laryngeal irritation due to the constant accumulation of this secretion about the larynx.

Again the nose can be well washed out and suction applied, and in the presence of secretion of any considerable amount suspicion is immediately directed to this sinus. Here transillumination is at its best and lastly irritation of the sinus, either the middle meatus, through the natural or accessory opening or one artificially made, or through the inferior meatus.

This procedure obtains secretion varying from small pieces of muco-pus in latent chronic conditions to the free pus or muco-pus in large amounts in empyema either acute or chronic.

My preference in this procedure is through the inferior meatus which in careful hands is safe, if the size and contour of the maxilla is considered and free drainage is assured by properly freeing the hiatus by shrinking or breaking over the middle turbinate; one should also avoid the entrance of air into the sinus, be assured the needle or cannula is not blocked against any structure and avoid too great pressure, (using a hand bulb or syringe) and where the return flow is obstructed to cease operations until a later date or to determine the cause and relieve it by suction or other procedure.

The discharge or washing is very often of an extremely foul odor in chronic empyema, especially so when the infection is of dental origin and at its worst where a piece of loose or dead bone or broken tooth root finds its way into the cavity. The patient notices this odor as well as a foul taste. The discharge from other sinuses rarely smells bad and then to a lesser degree than that of the maxillary.

The possibility must always be borne in mind that an empyema of the maxillary and sphenoid sinuses and a chronic suppuration of

the anterior ethmoid may be only a pyo-sinus condition arising from the fact that another sinus may be draining into them; it must also be remembered that secretion from any sinus draining posteriorly will often deluge the larynx giving rise to cough, hoarseness and expectoration. Too, this secretion will dry upon the pharyngeal and naso-pharyngeal wall causing characteristic changes in this mucous membrane and thick masses of material collect here which are very difficult to dislodge.

The discharge of posterior ethmoid and sphenoid disease presents itself posteriorly in the olfactory fissure, the spheno-ethmoid recess and upon the posterior naso-pharyngeal wall while under favorable conditions it can be seen issuing from the sphenoid ostium.

Great difficulty is often found especially in chronic cases in determining whether the discharge is from the posterior ethmoid or sphenoid, but where a good view of the sphenoid opening is to be had probing and washing and watching for the continuous presence of the discharge in the olfactory fissure and spheno-ethmoid recess is of great value, for when it is continually present it comes from the ethmoid, and should it not be so and again soon appear at the ostium then evidently it comes from the sphenoid.

To exclude the sphenoid as a reservoir to a posterior ethmoid condition one must wash the sphenoid, plug the ostium for twelve to twenty-four hours and upon removing the plug, if the sphenoid is clean and the olfactory fissure or spheno-ethmoid recess filled with pus, then it is a reservoir, and should discharge be found here and also from the sphenoid then both are infected, or if only from the sphenoid, then the sphenoid alone is infected. Where the sphenoid ostium is not seen, in order to determine the source of the secretion one is compelled to expose it by removing a part or the whole middle turbinate bone or by resorting to surgery upon the posterior ethmoid and later the sphenoid should the infection not prove amenable to other treatment.

All chronic suppurating conditions in the accessory sinuses are very prone to develop a hyperplastic condition of all tissues involved including the bone, and are prone to extensive suppuration or to polyposis with little discharge, the latter rare in the posterior ethmoid and very rare in the sphenoid. In many instances of prolonged suppuration the mucous membrane atrophies and loses its glands and their secretion, the discharge becoming very thick, drying easily and the whole cavity especially high upward becomes filled with foul crusts, particularly is this true of the posterior group, and unless corrected becomes a chronic atrophic rhinitis or

ozena.

This hyperplasia, mentioned above, must not be confused with that of the spheno-ethmoid region so ably described by Sluder, with its far-reaching disturbance of the spheno-palatine or Meckel's ganglion. This condition often occurs almost spontaneously, in his opinion, as a chronic one. The more I study these cases the more I am convinced that adenoids which are attended with prolonged nasal suppuration with obstructed drainage and ventilation in children are responsible for many of these cases which are often seen even before adult life. One must rely wholly upon postnasal examination, best made with a mirror and a very strong white light (an arc light is preferable) to recognize the changes found in this condition; namely, a mucous membrane which over the sphenoid, superior turbinates and often over the posterior ends of the middle turbinate, has lost its characteristic pink, moist, velvety appearance but is red or usually very pale, quite wet and in addition the posterior edge the septum, (or plica septi), shows on each side a distinct pale, wet enlargement high and bilateral, which in some instances extends well downward on the plica and often is large enough to impinge upon the superior and middle turbinate bones. The discharge is thin, rarely profuse, but often causes a like change, but here very dry in the mucous membrane of the pharyngeal walls and posterior tonsillar pillars and often causes cough, hoarseness and laryngeal irritation. Very often, too, Eustachian tube changes are noted which many times will disappear under treatment of the spheno-ethmoid condition. There is no condition found in rhinology, in my opinion, the careful study of which will be of greater benefit to the patient or of more satisfaction to the rhinologist than this one.

There are many other pathological conditions of the accessory sinuses which will only be enumerated: mucocoele, tuberculosis, syphilis, osteomyelitis and malignant growths all of which must many times be considered. I recently saw a case with a basal cell carcinoma originating in the posterior ethmoid.

Abscesses occurring in the middle turbinate, whether by inclusion or from cysts, and in the bulla ethmoid or uncinate process, are not infrequent.

One, too, must carefully analyze the history, both past and present and gravely consider symptoms of focal infection and general mental and physical upsets. Other diagnostic aids of inestimable value are transillumination of the anterior sinuses and careful x-ray examination, not only of the sinuses but of the teeth where antral disease might be present or where unaccountable headache is complained of.

The sinuses should also be carefully studied in any eye condition affecting the stricture of the globe and particularly in all lesions of the optic nerve. More remote conditions are meningeal irritation, meningitis and brain abscess.

The complications of accessory sinus disease, though of greatest importance, will not be discussed as the time allotted will not allow it.

The points to be emphasized are a careful consideration of the history both local and general; a careful and repeated search for the cause of any headache, in many instances of which use of laboratory methods, as urinalysis, Wassermann examination, x-ray, etc., and quite often a careful refraction and ophthalmoscopic examination, will reveal the source of the headache; for one must remember all headaches are not of accessory sinus origin.

DISEASES OF THE NASAL ACCESSORY SINUSES FROM A DENTAL STANDPOINT.*

By E. C. HUME, D. D. S., Louisville.

Mr. President and Gentlemen of the Kentucky State Medical Society: It is indeed a pleasure and an honor to be invited to participate in your program. The relationship between the doctor of medicine and the doctor of dentistry should be most cordial, especially should this be true between the rhinologist and the dentist. It has been my good fortune to have have associated with a number of men in your specialty and I have always found them fair and courteous.

A complete examination is essential for accurate diagnostic work. The nasal accessory sinuses, especially the maxillary sinuses, are so closely associated anatomically with the teeth and the tissues of the mouth that it is very easy to have disease involving both,—originating in the sinus and involving the tissues of the mouth and teeth, or, originating in or around the teeth and involving the maxillary sinuses. The chief causes of such involvements that originate in the mouth are apical abscesses, pyorrhea infections and impacted or unerupted teeth. Syphilis and tuberculosis may involve these sinuses, but such cases are rare. In all cases of maxillary sinus infection, I feel that the teeth and alveolar process under the sinus should be carefully examined by a competent dentist. Teeth with large fillings or crowns and spaces where teeth are supposed to have been removed or never erupted, should be carefully examined by the roentgen-ray for it is here we find necrotic areas in the bone and broken pieces of

roots of teeth that are abscessed, unerupted or impacted teeth, and cysts. This type of x-ray work is an essential part of the examination; it is very difficult and requires an exacting technique if the radiographic findings are to be of any value. A careful record has been kept by some of the very best men in the country and they find that about one in every twenty x-ray pictures, as they are generally made of the posterior superior teeth, is interpretable. Few of them show the relationship of root ends to floor of sinus, or the relationship of impacted or unerupted teeth to the sinus. It is impossible to make a complete radiographic examination of the human mouth, that is, one of any value, unless the technician makes at least 14 or more films of the teeth and alveolar processes in each case. It is difficult enough to interpret good films, and impossible to gain very much information from films unless correctly made.

Many cases of maxillary sinusitis do not respond when the naso-antral wall has been opened and treated through this opening, until diseased teeth have been removed and the necrotic tissue around root ends curetted away. I am convinced that the proper procedure for the treatment of most diseased maxillary sinuses is to open through the naso-antral wall instead of through the mouth. I do not believe it is safe to leave devitalized teeth under the floor of these sinuses, due to the close proximity of root ends to sinus and the lowered resistance of tissue around the root ends of such teeth. They may remain quiescent for a period of time, but when the patient's resistance is lowered these conditions are apt to become acute and the abscess rupture into the sinus. When such teeth are then removed organisms which are always present in the mouth complicate the sinus condition by entering it through the root sockets which do not close readily, often requiring plastic operations to close. That many sinus infections are of nasal origin is undebatable. The percentage of infections of maxillary sinuses that have their origin in the tissues of the mouth has been variously estimated from 25 to 75 per cent. I think Dr. Waldron has fully explained this in his article in the Journal of the A. M. A. in which he says he believes the great difference of opinion is due to men working in different fields.

There was a time when the mouth and teeth were given little consideration by medical men in their routine examination of patients, but I am glad to say that such conditions do not exist today as is evidenced by the fact that practically all first-class hospitals have a completely equipped dental department with a resident dentist in charge who makes routine examinations of all patients entering

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the institution and reports the oral condition to the attending physician. Dr. John B. Deaver, Philadelphia, says: "No Surgical Clinic is in complete and its patients have not gotten the benefit of the best that can be done for them, that does not have a dental surgeon who is a member of and who cooperates with the medical staff." Dr. Manfred Call, Dean, Medical College, Richmond, Va., in speaking of the dental interne says: "Until all patients charity and pay, can have the benefit of such talents and the staff of all general hospitals are strengthened by the addition of such men, we as a profession have failed in an obligation to the patient, the institution and ourselves."

No dentist should attempt radical maxillary sinus work until he has been thoroughly trained, and then he will get the best results by co-ordinating his work with the rhinologist. The failure of wounds connecting the mouth and sinus to close until the proper surgery has been done on the naso-antral wall or the obstruction to the normal opening removed, makes it necessary for close co-operation in this work. This has been stressed by many of the best writers on the subject, notable among these are Drs. Waldrons, of Minneapolis; Lynch, of New Orleans; Skillern, of Philadelphia; Schambaugh, of Chicago, and others familiar to all of you. Dr. Waldron's article in the *Journal of the A. M. A.* stressed the co-operation between the dentist and the rhinologist. His case reports were very complete and the results obtained must have been most pleasing to patients, in that a number of chronic cases that had resisted treatment over a period of time when attacked from either the mouth or the nose only, were cured when the broken root ends of teeth, necrotic bone or impacted teeth were removed in some cases, and the naso-antral wall opened sufficiently for aeration and irrigation in others.

Some of my friends in the dental profession believe that small pieces of tooth roots will do no harm when left in the alveolar process. This is a mistake, as it has been proven that practically 100 per cent of these when later removed and cultured will produce a positive bacterial growth.

There is a difference of opinion as to what teeth when abscessed may open into the maxillary sinus. It is usually the molars or bicuspid that produce such complications, but I have had cases where the lateral incisor and cuspid have opened into this cavity, due to an abnormally large sinus or the pus burrowing through the bone for some distance then opening into the sinus.

In chronic infections about the root ends of teeth often there is a total absence of symptoms that would direct one's attention to them, and it is easy to overlook the offending

teeth unless the roentgen-ray is used as a routine procedure in examinations.

In acute maxillary sinus infections of dental origin it is my routine practice to remove the offending teeth and irrigate with warm normal saline solution and if prompt recovery does not then occur to refer the patient to a rhinologist for completion of the work.

Careful team work by the rhinologist and dentist will give the best results.

MEDICAL AND SURGICAL TREATMENT OF SINUS DISEASES.*

By W. P. DRAKE, M. D., Bowling Green.

Disease of the accessory sinuses merits our most careful consideration for many reasons. We know that disease of the accessory sinuses of the nose is very common, and that it is the underlying cause of a great deal of poor health.

In a great majority of cases the patient is not conscious of any pain, the discharge is not noticeable, and there may be no obstruction to breathing. The cause of this trouble is obscure, and he is liable to "slip through our fingers" to our shame with his troubles undiagnosed. Therefore, I want to plead the cause of the patient who is not sick enough to go to bed, who is on his feet but dragging around, who has no appetite, "no pep", whose digestion is disordered, whose color is bad, and who is very nervous.

This is the patient who is given a careful physical examination, but with whom nothing abnormal can be found. He is told that he is "run down," and that he has been working too hard, that he is allowing trifles and petty details to irritate him unduly and that what he needs is rest and a tonic. This patient is a potential victim of nephritis, endocarditis, rheumatism, arthritis, ulcer of the stomach, cholecystitis,—and above all, the deadly acute respiratory disease pneumonia in all its form, influenza, bronchitis, asthma, etc."

The indications for surgical or medical treatment of the nasal sinuses vary considerably in different cases, and according to the sinus affected.

Certain features of any sinus suppuration are common to all cavities, and should be studied together; but each sinus requires individual consideration.

The treatment of acute sinus disease is mainly medical; we try to tide the patient over the acute stage. Operative procedure has been followed by a fatal issue all too often in cases of this kind. Sometimes operations cannot be avoided, but it should be a last resort. As the French say, "We prefer to op-

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erate in the cold."

The principal objects in the treatment of acute sinusitis are to facilitate the discharge and to control the pain. These may be accomplished by rest in bed, by sprays of a weak cocaine-adrenalin solution to shrink the swollen tissue, or by packing the nose with pledgets of cotton soaked with 20 per cent silvol or argyrol solution. Frequently the patient will need some of the coal tar products to relieve the pain.

To attempt to irrigate through the natural openings of the sinuses is a difficult and untrustworthy method. However, where there is sufficient space, I have found irrigation of the sphenoid sinus far easier than our textbooks would lead us to believe. If it is a maxillary sinus that we are dealing with, it is easy to cocaineize under the anterior end of the inferior turbinate, puncturing the antrum with a needle, and washing the antrum with a physiological salt solution, after which one may inject through the same needle about a drachm of a 1-250 solution of acrifiolet, or the same amount of 2 to 5 per cent solution of mercurochrome, allowing this to remain until the next irrigation. Five or six such irrigations should be tried before resorting to surgery.

At times we have cases where a single lavage through the inferior meatus has been followed by a complete cessation of suppuration. It is therefore wise to defer further treatment until pus is again evident in the nasal chamber. No doubt the success of a single treatment is due to the fact that the case was really a recent one undergoing spontaneous cure. Such a case in elderly people should be viewed with suspicion, as there is a possibility that it is connected with a malignant growth, and especially is this apt to be true if the teeth on the affected side become loose or fall out.

In the July number of the *Archives of Otolaryngology* for 1926, Dr. Arthur W. Proetz, of St. Louis, describes his method of displacement of irrigation of nasal sinuses.

The patient is placed in a supine position with his head projecting beyond the top of the treatment chair or table, the head being extended to that position which places the sphenoid sinus so that its ostium is upturned. The fluid to be introduced is now allowed to flow into the nostrils from a syringe, and comes to rest in a "V" shaped pocket formed by the face of the sphenoid with the cribiform plate of the ethmoid. The fluid does not enter the sinuses as their ostia are of insufficient size to permit the escape of air contained; gentle suction is now applied intermittently to one nostril, the other being closed and the palate and tongue being held in the "K" position to seal the pharynx.

When the suction is first applied, a bubble of air escapes from the sinus through the upturned ostium; on releasing the suction, this air is replaced by a drop of the overlying fluid; the process is repeated until the sinus is full. About a dozen alterations is usually necessary to accomplish this. The patient is returned to the erect position and it is claimed that the fluid remains in the cavity of the sinus from several hours to days. Various astringents and antiseptic solutions may be used in the same manner.

The value of vaccines as a method of treatment is still a disputed question. Stock vaccines as well as polyvalent autogenous vaccines may well be dismissed from consideration. Their value because of multiple protein content can scarcely be specific in any case and probably depends on the stimulant action of foreign protein upon the blood and its defensive mechanism.

In the December number of the *Annals of Otolaryngology and Laryngology* for 1925, R. A. Fenton gave a detailed description of vaccine treatment in a series of fifty cases of sphenoid-ethmoid disease of which surgery had failed to effect a cure. Autogenous vaccines from haemolytic cocci secured by loop inoculation of human blood media were found curative in 73 per cent of cases of obstinate sphenoid-ethmoid disease. Autogenous vaccines from non-haemolytic streptococci secured by loop inoculation of human blood media were found curative in 30 per cent of cases of obstinate sphenoid-ethmoid disease.

The injection of vaccines made with haemolytic cocci is recommended for cases of sphenoid-ethmoid disease which are unsuitable for, or fail to respond to, the established procedures of surgical and antiseptic treatment.

No doubt errors in diet play an important part in causing paranasal sinus infection, and correction of these errors is a most important therapeutic agent. There has been some discussion as to why some individuals have more lymphoid tissue in the upper respiratory tract than others. Whether the cause is dietetic, muscular, or physical environment.—whether one or all.—it has been found that lymphoid tissue is present in the upper respiratory tract in proportion as fats are absent from the diet. It has been demonstrated that babies fed on formulas low in fat show signs of mastoid and sinus infection. Where fats have been added to the diet, we can observe a decrease in the amount of lymphoid tissue with a subsidence of cough and expectoration and with a gain in weight without additional treatment. There seems also to be an increase in the size and redness of the turbinates and a sub-acute laryngitis where there is an excess of sweets in the diet. If there is a lack of a proper amount of vegetable foods,

there seems to be a catarrhal discharge from the nose and throat such as often accompanies cases of impaired hearing. A granular condition of the posterior pharyngeal wall often appears when there is an excess of foods made from flour.

A great deal has been written with reference to the benefit our patients receive from a change of climate. It is unfortunate, however, that the statistical information as to what climate is best adapted to a definite pathologic condition, and where it is to be found, is not available for scientific discussion.

We have tubercular sanatoriums east, west, north and south that will send you convincing literature pertaining to the influence of climate on all so-called non-surgical cases of infections of the nose and throat, emphasizing particularly the latitude and longitude of their respective locations. Even when patients are benefitted by a radical change of environment there is a question whether this is due entirely to climatic changes and the out of door life; or whether it may not, in part at least, be due to a change in habits, both mental and physical. If, as the result of a proper climatic environment, any disease processes were modified or cured, they should be those with mucous membrane infections, as these would be brought directly in contact with the healing atmosphere.

Therefore, we can expect in a properly selected climate benefit in all functional disorders, and in cases in which the infection is confined to the mucosa; and it is also a valuable adjunct in the treatment of those cases in which the deeper structures are involved.

We have all served our term in trying to cure chronic empyema of the sinuses by medical treatment. The whole gamut of sprays, topical applications, suction, and the various methods recommended for dealing with chronic empyema of the sinuses, have been used. It is my judgment and conviction that the only way to deal with chronic suppuration of the sinuses is by surgical treatment.

MAXILLARY SINUS.

It has long been recognized that for the cure of the majority of cases of chronic inflammation of the maxillary sinus nothing short of a radical operation will suffice. It is conceded that the nasal puncture and lavage will cure most of the acute cases, but where the mucous membrane has become chronically thickened and has become the seat of polypoid degeneration, with or without bone necrosis, puncture and lavage have little effect.

Puncture and lavage will assist us in establishing a diagnosis in the presence of free pus, but may entirely fail to do so when the

disease is manifested chiefly by the presence of solid granulation tissue. Establishment of a free antra-nasal drainage by the formation of a large opening in the antra-nasal wall in a great many cases will be sufficient. However, in long-standing cases, nothing is nearly so satisfactory for diagnosis and treatment as exposure of the interior of the sinus to direct inspection and palpation through an opening of the buccal wall, that is, the so-called Caldwell-Luc operation. This permits a removal of diseased tissues by direct inspection, the operation being completed by establishment of permanent nasal drainage into the inferior meatus through a resection of the nasal wall and a final closure of the original buccal opening.

I believe in all cases of maxillary suppuration associated with bronchial asthma that the Caldwell-Luc operation should be performed, for it has been rather definitely determined that the accompanying hypertrophies and polypi play the greater role in producing bronchial asthma than does the empyema.

Objections have been registered against these radical operations in that they frequently result in permanent damage to healthy teeth. It is advisable for one doing the Caldwell-Luc operation to avoid exposure of the roots of the teeth by the removal of the bone covering them, or by destruction of the vascular or nerve supply. It is a generally known fact that if the supporting alveolar process and pericemental membrane about a tooth are destroyed by injury or disease, they will never be replaced. A focus of infection will usually set up and the root will be eventually lost. In doing the Caldwell-Luc operation, if the incision through the buccal plate be too low, the roots of some of the teeth near the apices may be exposed and thus converted into necrotic foreign bodies from the loss of nourishing and supporting tissue. Such an injury to the teeth would probably interfere with the success of the antrum operation by setting up a new focus of infection. Therefore, the buccal opening should be well above the apices of the roots and care should be taken not to remove the bone too far downward. Granting that an occasional damage to a tooth did result, this in itself should not cause condemnation of an operation which is the only satisfactory operative procedure in many cases of chronic maxillary sinusitis.

Whatever type of operation the individual operator wishes to choose, effective removal of all the diseased parts is the end to be attained. Personally, I feel that persistence of discharge and continuation of previous symptoms are due, in a large percentage of cases, to an incomplete extirpation of dis-

ceased parts. In other words, thoroughness is the object; whatever form of operation is chosen.

Packing is rarely used in nasal operations except where there is a tendency to hemorrhage. Exceptions will no doubt have to be made to this rule after an operation is performed on the maxillary sinus. If packing is used, it should be removed not later than forty-eight hours after the operation. It was the former practice to repack, but such procedure only adds to the discomfort of the patient and nothing to the end-results. The sinus should be left absolutely alone for four or five days. At the end of that time it should be irrigated with some sterile saline solution to remove any clots that may have remained. Nothing more should be done to the sinus in the way of irrigation, as water is irritating to the mucous membrane.

If the discharge is profuse or unnecessarily prolonged, I have injected about a drachm of 20 per cent solution of nitrate of silver into the antrum, allowing it to remain several minutes, then neutralizing with a normal salt solution with good results.

It is very important, as we all know, to lessen granulations and to keep the sinus opening from closing. For this purpose I have used nitrate of silver, trichloroacetic acid and chromic acid to advantage.

FRONTAL SINUS.

By far the most serious of all sinus suppurations is empyema of the frontal sinus. Perhaps no problem of surgery has been the object of more world wide study, and even so, yet more investigation is necessary in the future, before success can crown these efforts.

In the January number of the *Laryngoscope* for 1921, Dr. R. C. Lynch, of New Orleans, describes the technique of a frontal sinus operation which he had devised by taking details of technique from a number of operators. He has reported 75 or more cases and the results seem satisfactory and permanent. He does not touch the anterior wall, therefore no deformity results. He removes the entire floor of the frontal sinus and the bony plate of the ethmoid, thus securing a large drainage area into the nose. Apparently Dr. Lynch has devised an operation on the frontal sinus that is as satisfactory as a simple mastoid operation. However, we are becoming more convinced that it is seldom necessary to do a radical frontal sinus operation, unless the symptoms show a brain involvement.

We believe that if the natural opening is enlarged enough to give free drainage and the discharge removed by suction, if necessary, this treatment will show the highest percentage of recoveries. It is extremely

simple to enlarge the frontal sinus opening by placing the cutting forceps just under the anterior attachment of the middle turbinate, with the tip of the movable blade pointing toward the internal canthus. Pressure in this direction will break into the anterior ethmoid cells. The cells are bitten away to the frontal plate and backward as far as the posterior wall of the anterior ethmoid, which is recognized in nearly every case by the firm partition. This space is smoothed by the straight end of the curette. The angle end of the curette is now inserted with the cup pointing forward and curetting motions are made in an arc toward the tip of the nose. The smooth, firm bone will be recognized as soon as all the cells have been broken and removed.

If one is careful to remove the extreme anterior ethmoid cells and to enlarge the space upward to the frontal sinus with the angle end of the curette, it will not be necessary to use sharp rasps for this purpose, as recommended by Dr. Good many years ago.

Packing is not necessary and irrigation is superfluous. Drainage of the frontal sinus is facilitated by its location and very little after-treatment is required, except to prevent the opening from closing.

ETHMOIDS.

Most text books speak often of fronto-ethmoid infection, but fail to include the maxillary sinus in this category. It was our former belief that the majority of cases of chronic catarrh resulted from suppurative ethmoiditis. It is highly probable that ethmoiditis was the original source of infection in the antrum. Ethmoiditis may temporarily be cured, with or without local treatment, only to be reinfected from an overflow of pus and secretion from the antrum. In our early experience it was our custom to attack the ethmoids but it has been found that in a great many cases, even after a thorough extirpation of the ethmoids, the polypi recurred in more malignant form than before. It is in this type of case that we find maxillary sinusitis plays a very important part. It is immaterial whether the disease originates in the maxillary antrum or becomes secondarily in nasal pathology. It is surprising how disease fronto-ethmoidal suppuration is much benefitted or cured by establishing drainage of the maxillary antrum. Personally, I believe that we should shift from our former practice of primary attacks upon the ethmoid labyrinth to surgery of the antrum and septum. Correction of defects in the septum should receive our first consideration in nasal pathology. It is surprising how many cures are effected by this treatment alone.

When we do consider a primary operation

on the ethmoids, none of us would deliberately choose the external route without having grave reasons for so doing. It is only after intranasal procedures have failed to bring about an amelioration of the symptoms, or where there is external ruptures with formation of a fistula, or where actual orbital or cerebral complications exist, that we resort to external operation. If, however, our decision be in favor of the external route, the operation should be one in which the entire labyrinth from the lachrymal to the presphenoidal cell is to be exenterated—and not merely one in which a simple opening is made through the rim of the orbit, and haphazard removal of a few cells lie within easy grasp of the forceps. It should be approached with the idea of exenterating the entire capsule from the foremost infundibular cell to the sphenoid area, and from the fovea of the ethmoidalis to the lamina papyracea, for unless this is done we shall find ourselves in the same predicament as if we had performed an incomplete intranasal operation. However, let us remember that radical operations on the accessory sinuses do not all result in radical cures.

It is easy to see that, in contrast with the external operation, the intranasal route will be chosen by most operators. In some cases, the preliminary resection of the middle turbinate followed by appropriate treatment and careful observance will be all that is necessary. Yet it may often be essential to undertake further operative work.

Then what type of operation shall we perform? Shall we remove all, part, or none, of the middle turbinate? In my opinion except wide noses, it is better to remove a portion of the middle turbinate; since I believe that aeration in ethmoid work is as important as drainage and that sufficient aeration cannot be obtained without removing at least a portion of the middle turbinate.

If the patient has a deflected septum, it is necessary to do a submucous resection before attempting any operation on the ethmoid. By this procedure, sufficient space is created to perform the intranasal ethmoid operation—in a great many cases without removal of the middle turbinate.

It is believed that in doing the Halle or Mosher operation more of the mucous membrane is sacrificed than is best. I feel that one can accomplish a thorough exenteration of the ethmoid cells by any good biting forceps, but it must be emphasized that the operator should have a well developed sense of touch and a clear vision of every bite made. Furthermore, it is doubtful if any operator in the progress of the operation can determine whether any certain cell left will regenerate sufficiently not to give further trouble

or infect neighboring cells or sinuses. Therefore, when in doubt, such cells should be removed.

My personal preference is for forceps with the universal handle, because the lower lip is stationary and the blade can be placed just where it is wished to cut, and there is no pulling back in the action.

The ethmoidal operation is performed under local anaesthesia. If only one side is to be operated on, two applications are taken and wound with a small piece of cotton and moistened with adrenalin 1 to 1000 and applied to flaked cocaine until saturated. One applicator is placed as high as possible on a line with the anterior end of the middle turbinate, which blocks the anterior ethmoidal nerve. Another is placed under the posterior end of the middle turbinate which blocks the sphenopalatine ganglion. Applicators should remain from 20 to 30 minutes. This, with the application of cocaine to the septum and the operative field, will be sufficient for the operation to be performed without pain and, in the majority of cases, with very little bleeding.

In performing the ethmoidal operation, the patient is placed in a sitting position, with the head well thrown backward. The open cutting forceps are placed under the middle turbinate with the upper blade just under the anterior attachment and pressure made on a line with the internal canthus, breaking into the anterior ethmoidal cells, biting backward as long as any soft bone is encountered. As we progress backward for a complete exenteration, the head is brought forward so we can follow along the plate of the skull; and then with the straight end of the curette, and with a firm but gentle stroke in every direction, curette away all of the soft tissue. The anterior cells are removed with the angle end of the curette, by curetting in an arc toward the tip of the nose, thus removing the anterior cells and enlarging the space upward toward the frontal sinus. We now cut away the floor of the capsule, giving free drainage under the entire length of the middle turbinate. The cavity is lined with swabs of cotton with iodine-glycerine, or any other preparation the operator may wish to choose. The cavity is not packed, but a finger length piece of cotton may be put into the nose as far backward as the anterior attachment of the middle turbinate. This should be removed in from 4 to 6 hours. After-treatment following ethmoidal operations is highly important.

SPHENOID SINUS.

Disease of the sphenoid sinus presents difficulty in diagnosis on account of its situation in the body of the sphenoid bone. The natural opening of the sphenoid sinus is hid-

den by the posterior tip of the middle turbinate so that pus is issuing from it is hard to detect. Because of so many overlying structures, a satisfactory shadow upon an X-ray plate is difficult to secure. But once a diagnosis is made, the sphenoid responds kindly to surgical treatment. In the great majority of cases it will be necessary to remove the middle turbinate before operating on the sphenoid; but in some cases there will be sufficient space to permit the operation without removal of the middle turbinate. One should attempt to locate the natural opening. This is not difficult and it is much easier to enlarge the natural ostium than to break through the sphenoid wall. After coagulating and shrinking the natural opening, the anterior wall of the sphenoid is removed by means of punch and biting forceps, giving ample drainage and resulting, as a rule, in a cure of the empyema. The sphenoid sinus is more prone to close than any of the other sinuses and it is very essential to bite away any granulations and make use of any remedies that may prevent its closure.

DISCUSSION:

Shelton Watkins, Louisville: I have enjoyed very much the three interesting papers read by Doctor Marks, Doctor Hume and Doctor Drake. As my name is on the program to discuss Doctor Marks' paper on the symptoms and diagnosis of accessory sinus diseases, I will limit my remark to it.

Headache and nasal discharge are the most common symptoms of acute sinusitis but neither is very reliable in making a differential diagnosis, because they are so widespread. Usually most of the head aches and the nose is filled with discharge. In fact, it is not necessary to determine just which sinus, or sinuses, are involved in an acute infection, because the treatment for all is practically the same. Of course, should an empyema or serious complication arise, a differential diagnosis is required. Among the symptoms of empyema there are two which are quite reliable: namely, when the maxillary sinus is involved there is a heavy feeling in the cheek on leaning forward; and vertigo is usually present in empyema of the sphenoid.

The chronic cases are the ones that give us the most trouble in making a diagnosis. The symptoms frequently are very slight. Probably, the most common symptom is post-nasal discharge. Sometimes the patient does not know that he has a sinus infection, and the symptoms of which he complains are due to a secondary infection, as of the pharynx, larynx or some distant part of the body. Headache is usually absent, unless there is an obstruction to drainage from one of the sinuses. The most important point is to locate the origin of the discharge and often that is not easy to do. It is often neces-

sary to make a prolonged examination and sometimes several.

In the anterior group it is often found that the antrum acts as a reservoir for discharge from the anterior ethmoidal or frontal sinuses, or both, and we must not overlook this fact. After irrigating the antrum one must watch for reappearance of the discharge. If no discharge is noticed in the middle meatus within fifteen to twenty minutes, we know it is not coming from the antrum, because it would take much longer than this for it to accumulate in the antrum and overflow through the orifice. If after the frontal sinus is irrigated and the duct blocked off, the discharge reappears within a short time in the middle meatus, we have limited the source of infection to the anterior ethmoidal cells. It must not be forgotten, however, that more than one of the sinuses may be infected at once. The anterior ethmoidal cells and the frontal sinus are frequently involved at the same time, because the former form most of the floor of the latter. The same process of diagnosis by elimination, is carried out in the posterior group. Here the sphenoidal sinus frequently acts as a reservoir for discharge originating in the posterior ethmoidal cells.

Another important step in localizing the source of infection in chronic cases is to remove part, or all, if necessary, of the middle turbinate, in order to get better exposure and drainage. Sometimes the discharge is from a misplaced ethmoidal cell located in the middle turbinate. Also, it may be necessary to open the bulla ethmoidalis or the cells posterior to the infundibulum in the uncinate process to find the source of the discharge. As a rule the infection in the ethmoids is limited to one or a few cells. We do not often see involvement of all of them.

In making the diagnosis I would mention lavage as of first importance. I do not consider roentgen-ray examination to be necessary in acute cases, unless there are symptoms of a complication. In chronic cases x-ray films are often very helpful and I believe should be made. The stereoscopic films are especially good. Transillumination is valuable in acute cases but of less importance in chronic ones. The most important point to be emphasized about the differential diagnosis is a careful and prolonged examination and, when in doubt, two or more examinations. Next, it is important to remove every structure in the nose that is in the way. This includes enlargements of the middle turbinate, polypoid formations and deflections of the septum.

Joseph D. Heitger, Louisville: It is rather interesting to note the change of opinion that has occurred in this section from that expressed several years ago. It was formerly thought that the roentgen-ray was a most important adjunct in the diagnosis of accessory sinus diseases. We

now place much less confidence in the roentgen-ray diagnosis of sinus disease and rely more on the clinical findings. In acute cases without complications roentgen-ray examination is seldom necessary, but in chronic cases it gives information that is most essential. We must know whether the sinus is present or absent, also its general contour and size. However, when it comes to actually making the diagnosis of sinus disease with the roentgen-ray, I am from Missouri and must be shown.

Referring especially to Dr. Marks' paper where he speaks of pain: One must not lose sight of the fact that pain in disease of the sphenoid sinus may simulate the pain of any other sinus infection, or pain originating entirely outside of the accessory sinuses, very often simulates pain due to mastoid infection. A number of cases of this type were reported by Lille before the rhinological section of the A. M. A. meeting at St. Louis in 1922. At that time he issued a warning against mastoidectomy based on the manifestation of pain alone. In many cases of sinus disease pain is referred to other localities.

As to the location of pus and tracing it to its source: One must always be careful to differentiate between dry crusts which may become visible as a deposit on the mucous membrane and pus that comes from the sinus cavity. Crusts removed from the mucous membrane are not re-formed for many hours, whereas pus that comes from a sinus reappears within a few minutes.

It was formerly thought that chronic suppurative inflammation of the frontal sinus existed without involvement of the other sinuses: When I was abroad this summer both Halle and Hajek stated they had come to the conclusion that in frontal infection the anterior ethmoid is practically always involved. In making the diagnosis by irrigation Hajek mentioned the fact that after he has irrigated the antrum, if in fifteen minutes or half an hour pus reappears in the middle meatus, one may be sure that there is frontal and anterior ethmoidal involvement.

Concerning Dr. Hume's paper, there are a few points I wish to emphasize: He quite properly stresses the fact that the alveolar process should be examined in all antral infections. That is something which must always be borne in mind. Another statement which may seem radical to some of us, and yet there is ample evidence to support it, is that it is unsafe to leave devitalized teeth under the antrum unless it is absolutely certain there is a wide area of bone above. A narrow bone and a devitalized tooth is a dangerous combination. Hajek in his recent book (1926) shows two cases where very fine sinuses extended from such teeth through a thick alveolar process allowing antrum infection, the sinuses disappearing as soon as the teeth were extracted. These sinus-

es went directly through the thick alveolar process and infected the antrum. In neither case did the antrum show any local disease. Of course such cases are exceptional. This may be better appreciated when one recalls that in ninety per cent of antral cases the infection must go through the natural or an accessory opening with the mucous membrane, and one can readily see that this mucous membrane on account of the resulting hyperplasia is no longer a functioning mucous membrane but becomes a foreign body and must be removed regardless of whether there is a devitalized tooth, granuloma or what not with it. Very frequently the exodontist removes an infected tooth thereby producing an opening into the antrum. Such cases must be traced through the natural opening, an accessory opening, or a artificial opening made in the antrum from the nose. This is not an infrequent occurrence and should always be kept in mind in dealing with antral infection. A great many of these cases will not heal until an accessory antral opening is made. Dr. Hume and myself have had several such cases.

With especial reference to dental cases: Dr. Hume will recall the case of a middleaged woman from Indiana whom we saw last summer. For ten days she had suffered intense pain from an iritis which large doses of morphine did not relieve. She first consulted me, and at the outset stated that all her teeth had been extracted and she had been wearing a plate for eight months. I referred her to Dr. Hume who found three necrotic roots on the right side which had been left when her teeth were extracted. He removed these under local anesthesia, and that night the patient had perfect relief from pain for the first time in ten days. In two weeks she made an uneventful recovery.

Dr. Drake spoke of change of climate as being beneficial in certain cases of sinus disease: That is something that has always puzzled me. All of us who have visited our colleagues over the country know they are treating the same kind of cases we are with few exceptions. Lynch, of New Orleans, does not see so many patients with mastoiditis as we do in this part of the country, and we do not see so many as our colleagues in the New England states. Dean, of Iowa, sees more infected sinuses in children than we do, and for that reason he is always on the lookout for them, and his colleagues in general practice in their examinations of children discover many cases of sinus infection. This may not be true in other parts of the country. When we come to consider change of climate, we must also consider change in diet and habits which may have something to do with the relief obtained in sinus infections.

In regard to surgery: There are certain cases of sinus disease, both suppurative and nonsuppurative, that get well with good aeration and drainage; and there are others that will not re-

cover under the more conservative methods and require obliteration.

Dr. Drake mentioned the Lynch operation which suggests another line of thought: While Dr. Lynch has secured better results from the radical frontal operation than any other man in the country, he attributes his success to two or three factors: In the first place, he does a very radical removal, he leaves nothing but the anterior plate—which he leaves in practically all cases—unless there has been a previous operation and the plate removed which necessitates a plastic operation. He always gets good exposure in all cases and determines beforehand the condition of the maxillary antrum which usually requires radical surgery. This radical antral operation is done first and the radical operation on the frontal sinus is performed ten days subsequently. With the infected antrum out of the way, he can better approach the tissues of the frontal sinus and obliterate the cavity much more readily and thoroughly. Lynch also thinks he gets a certain amount of benefit in the obliteration by packing for several minutes during the operation with tincture of iodine, following the investigations of two Japanese observers.

In regard to infected antra: Oskar Hirsch, of Vienna, has recently suggested a very interesting point which should be emphasized. I am sure all of us have seen cases of recurrent polyposis in which the ethmoid has been operated on repeatedly and the polypi reappeared just the same. He has shown that where for a great many years we have blamed the ethmoid for polyposis, the actual condition is that the mucous membrane of the antrum incarcerated at the natural or accessory opening is responsible for polypoid formation, that this is facilitated by irrigation of the discharge as it passes over the covering of the ethmoid, and that results in polyposis of the concave surface of the middle turbinate, the covering of the ethmoid, and the middle meatus. An interesting fact is that his report confirms the findings of Zuckerkandl in regard to the blood supply. The blood supply of the mucous membrane of the antrum and outer covering of the ethmoid, the middle meatus, etc., comes largely from the sphenopalatine artery. The mucous membrane becomes involved in repeated attacks of rhinitis. The ethmoid has an additional blood supply from the ethmoidal arteries. Polypi are not confined to the ethmoid interior, their formation occurs more from the surface.

Dr. Drake stated that the criticism has been made of the Halle operation that it sacrifices too much of the mucous membrane: That can hardly be true because Halle circumcises the whole ethmoid before he does anything else, and does it in such way that he makes a clean-cut surface and sacrifices less mucous membrane than by any other method of attack on the eth-

moid proper. Also in the frontal operation he uses his flap method which gives much greater protection against closure of the nasofrontal opening than by any other operation. In the last few years he has also called attention to the fact that a great many ethmoid operations are unsuccessful because in a large percentage of cases there is a second layer of cells in the ethmoidal roof which are not opened. One must use more care in the roof of the ethmoid in looking for the second layer of cells.

J. A. Stucky, Lexington: I fully agree with what Dr. Marks said about the diagnosis of accessory sinus diseases. There is a difference between the pain from negative pressure and from positive pressure. I think the pain from negative pressure is more severe than that from positive pressure, and if we resort to surgery within the sinus to relieve pain due to negative pressure we will be disappointed in the results.

Dr. Marks described the character of the discharge in relation to symptoms: Where there is a slight sanguineous and not a thick mucous discharge, we have an acute sinus infection with sepsis. The profuse discharge which we sometimes see is an exudate not a secretion, and when we stimulate the mucous membrane to secrete freely the patient is relieved.

In acute cases I seldom perform turbinotomy until I have tried fracturing and pushing the middle turbinate to one side to give more room. I believe the probe and suction should be rarely used. This was impressed upon me at the National Convention in Montreal more than any one thing. Many of the speakers stated they found less and less use for probing and the suction apparatus.

I was particularly interested in what Dr. Hume said about the relationship of the teeth to accessory sinus disease. The cases of apical abscess, unerupted teeth, impacted teeth and necrotic roots that are left in extractions are the ones that cause the most trouble. I want to mention a remark made by Dr. C. E. Rice at the Montreal meeting about curettage of the tooth socket after extraction. I am sure that I am seeing unfavorable results from the too free curettage, the cutting away of bone, etc., after the tooth is extracted. Dr. Rice says curettage of the tooth socket is seldom necessary, it is often dangerous, and should be practiced with caution.

I agree with Dr. Drake that operation should be the last resort in disease of the nasal accessory sinuses. I am aware of no part of the human anatomy that nature will take better care of (if she is given a chance and), if we give needed assistance than the ethmoid and other accessory sinus regions. What nature wants is ventilation and drainage and when we provide these the condition improves. In acute cases our efforts should be confined to methods for facilitating these and relieving pain.

In chronic sinus disease surgical treatment is usually indicated. I no longer use packs of cocaine-adrenalin, but I do use the hypotonic solution recommended by Snuder. The majority of these patients are recalcified, they need hyperalkalinization. Nothing adds more to the comfort of the patient than an alkaline drink several times a day, and for this purpose I am partial to kalak water.

Samuel G. Dabney, Louisville: It seems to me that the roentgen-ray as a diagnostic measure in accessory sinus disease is limited to a few cases. One is, of course, to determine the presence or absence of the sinus, and especially the contour of the frontal sinus preliminary to external operation. Another is to determine the relationship between the teeth and the antrum. This is probably the most important. Here the roentgen-ray is invaluable and the only method of determining the existing conditions. I think Sinclair Thompson in the latest issue of his book says that the x-ray in antral disease has been shown to be unnecessary and is often misleading. That is exactly what I have found to be true. Roentgen-ray examination in antral disease does not necessarily exclude inflammation, and it seems to frequently show evidence of inflammation where none exists.

Formerly the most of us were very enthusiastic about transillumination in sinus disease. This method may also be misleading, although I find it of great value in disease of the antrum, slight value in the frontal, and none in the other sinuses.

Some of my x-ray friends claim to be able to make the diagnosis of disease in the sphenoid and posterior ethmoid by the roentgenogram, but I do not feel sure that it is of much value here. Except for outlining the frontal previous to external operation, and except for dental examination in antrum disease, I get more out of transillumination than out of the x-ray.

I was particularly interested in what Dr. Stucky said about surgery in sinus disease, and agree with him thoroughly. There has recently been a tendency to the performance of entirely too much surgery of a radical character in sinus infections. In many cases ventilation and drainage will be sufficient. In acute cases operation is unnecessary. In chronic cases and in existing obstruction of the sinus, an opening must be made for drainage.

I have never been very enthusiastic about either probing or suction. Acute cases can be relieved by the simpler measures, chronic cases by opening and drainage.

I was greatly interested in the immediate relief of pain obtained by the patient mentioned by one of the speakers after the removal of the roots of three teeth. I understand from his remarks that the infectious process from the teeth had extended to the maxillary sinus. I think the relief of pain in adjacent organs, like

the eye, when it comes almost immediately (a few hours or less) must be due to the removal of a reflex irritant. I can hardly think a toxemia could be relieved so quickly.

C. A. Lester, Louisville: While the roentgen-ray findings are of value in accessory sinus diseases, they are not by themselves sufficient to warrant any operative procedure unless the clinical symptoms agree with those findings. On the other hand, the clinical symptoms may not always justify operation without confirmation by roentgen-ray examination.

Sometimes things happen which are difficult of explanation. A few years ago a member of my own family, female, then aged 40, had the most intense irritation of both eyes, there was much redness and congestion, she was unable to read, and had great susceptibility to cold. I did not know what was the matter as I could find nothing wrong with her eyes. She finally became extremely nervous. I had her examined by several well-known specialists—clinicians, neurologists, ophthalmologists, otologists, rhinologists, laryngologists—but no diagnosis was made. We were then living in a small town in Minnesota, and I took her to Minneapolis once each week for more than three months for observation and treatment. While out of doors she had to keep her head well covered as a protection against cold and because her eyes were so painful. About that time I had another friend of mine examine her and he suspected necrotic tooth roots as the cause of her trouble. Several of her teeth had been extracted some years previously. Roentgen-ray examination was made and one root discovered. This was extracted and from that day she had no further symptoms.

Another point: Patients with chronic sinus disease generally have toxemia. Toxins accumulate in the blood and must be eliminated through the excretory organs. These patients are frequently the subjects of toxic symptoms, the heart, kidneys, etc. giving evidence of irritation. In the presence of sinus infection a complete physical examination of the patient should be made. The more I see of these cases the more I am convinced that even in adults the tonsils are infected oftener than we have hitherto supposed and they are not going to get well until the tonsils are removed. The tonsils must be carefully examined in all cases with especial reference to the submerged type. Many patients who have been ill for months rapidly improve after the tonsils are removed.

J. D. Williams, Ashland: I want to express my appreciation of the papers presented by Drs. Marks, Hume and Drake.

I quite agree with the gentleman who said he did not believe in too radical surgical treatment of acute sinus affections. There has been entirely too much drastic surgery attempted in cases of sinus disease in general. The result is

sometimes too much aeration. I have seen many causes of ethmoiditis where the entire ethmoid labyrinth was removed and afterward the patients were much worse than before. I do not believe any sinus should be entirely and permanently uncovered; it is quite natural for the mucous membrane to resist that.

So far as the frontal sinus is concerned: Most frequently the pus can be removed and the condition of the patient restored to normal by simple drainage, medicinally first, perhaps mild intra-nasal surgery afterward.

In regard to the maxillary antrum: I rarely pack the antrum any more. I have not done so for at least five years.

As to the type of operation: I really prefer the Denker method although it is more difficult than some of the other procedures recommended. By this method a straight opening is made into the antrum which can then be inspected by direct vision, and for that reason the Denker operation seems preferable.

In this connection: We all know how frequently an opening the size perhaps of half an inch will almost close within a few days so the antrum cannot easily be irrigated. To prevent this I have been in the habit of introducing a large rubber tube into the sinus through the nose and leaving it in situ for a week or ten days.

I agree that transillumination is preferable to roentgen-ray examination. I have had very little satisfaction from the roentgen-ray, particularly in mastoid work. It has been very confusing there.

S. B. Marks, Lexington (in closing): I have certainly enjoyed the papers of Drs. Hume and Drake as well as the discussion.

I was glad to hear Dr. Hume speak of the importance of roentgen-ray examination in maxillary sinus infections. I have seen a great many patients with sinus disease who were suspected of having some type of focal infection, and it is particularly in that type of case that I have made it a rule to have an exodontist assist in interpreting the roentgenogram, and to have edentulous gums x-rayed. We have been surprised at the number of cases in which unerupted molars have been found communicating with the maxillary sinus. Sometimes we see a patient with an unerupted molar tooth with no pathology about it. In closing I wish Dr. Hume would say something about such teeth.

Referring especially to Dr. Drake's paper: I do not like to remove the middle turbinate, and in many cases it is unnecessary. It is surprising the ease with which the middle turbinate can be displaced toward the midline by using Sluder's heavy speculum. With the nose well cocaineized we can sometimes do wonders with this instrument. We can push the septum toward either side, cleanse the ethmoid, and explore other places which could not be done without

such an instrument.

In ethmoid cases a point of great value is to work well forward at the same time removing all the anterior ethmoid cells and thus avoid post-operative obstruction.

In sphenoid operations I think too much stress cannot be placed upon the importance of removing the superior-posterior ethmoid cells.

I appreciate Dr. Watkins' remarks about the advisability of letting acute sinus infections alone. All operative procedures should be avoided in acute cases. There is one thing, however, which is of great benefit,—I call it my "cold cure,"—that is, to shrink the mucous membrane thoroughly and spray with one per cent mercurochrome, to be followed later by an alkaline irrigation. This plan relieves the annoying coryza, removes a great quantity of pus in acute sinus infection, and promotes the comfort of the patient for at least twenty-four hours.

After all that has been said, the roentgen-ray has its advantages in certain cases of sinus infection. I recently saw some pictures with Dr. Shea, of Memphis, in which he showed that a valuable point in connection with roentgen-ray examination was in young children the subjects of maxillary sinus infection. In children eight to nine years old if there is maxillary sinus suppuration there will almost certainly be a lack of development of the frontal sinus on that side. This he regarded as a valuable diagnostic point.

Dr. Heitger spoke of sphenoid pain: This is subject to much variation in its manifestations on account of the wide distribution of the nerve supply from the sphenopalatine ganglion. Dr. Lyman, of St. Louis, recently reported several cases simulating mastoiditis due to sphenopalatine neuralgia, and I notice Blake in his new book mentions cocaineization of the sphenopalatine ganglion to relieve the terrific pain accompanying iritis as demonstrated by Sluder.

Arbuckle and Sluder have done some wonderful work on sinus disease in children, the importance of which cannot be too strongly emphasized.

Dr. Stucky spoke of alkaline water as being of great advantage in the after-treatment of sinus infections. I have had considerable success by leaving a tube for several days in the maxillary antrum through the nasal opening, as mentioned by Dr. Williams.

Dr. Stucky also mentioned negative pressure: The cause of pain in negative pressure sinus affections is not in the sinus proper, pain is due to blocking of the sinus outlet which causes a loss of air in the sinus, with a consequent swelling of the lining membrane with pressure upon the nerve endings to this membrane.

E. C. Hume, Louisville (in closing): I appreciate very much the kind treatment I have received from the gentlemen who discussed my paper. The fact is I have "gotten off" rather

easier here than I usually do among my own colleagues.

Dr. Stucky mentioned curettment of root sockets, located beneath the floor of the maxillary sinus. In many cases curettment is absolutely necessary, but it must be done accurately and gently under some form of anesthesia, preferably block anesthesia of novocaine. The muco-periosteum should be retracted so the operator can see just what he is doing and thus avoid removing masses of healthy bone as mentioned by Dr. Stucky. The object of curettment of tooth sockets and abscess cavities is merely to remove the necrotic tissue. By using a small sharp curette and ordinary care there is little danger of doing any particular damage. Radical, blind curettment underneath the floor of the maxillary antrum cannot be too strongly condemned.

Dr. Dabney and several others spoke of the futility of roentgen-ray examinations in sinus disease: I believe this method of investigation has a distinct place in a great many cases. Although a diagnosis of sinus infection may not be certain based upon the roentgenogram alone, it is a valuable adjunct, possibly not as valuable as transillumination in most cases. I have found by making a small intraoral plate (Eastman No. 2) such as those exhibited, quite often there will be found marked differences in the maxillary sinus on the right or left side of the same case. Although both sinuses may be absolutely normal so far as the rhinologist has been able to determine, with no indication of disease about the tissues of the mouth, with thirty-two perfectly good teeth, with no discharge from the nose and no pain, yet there will be found a marked difference in the right sinus from the left or the left from the right. This has also been true in a series of skull pictures, both wet and dry specimens, that we have had an opportunity to make. In these specimens the maxillary sinuses were thoroughly washed to be certain we did not leave therein any impacted material and they were then x-rayed in the regular way.

In regard to the almost immediate relief from pain experienced by the patient referred to me by Dr. Heitger, a point which was questioned by Dr. Dabney. It should be explained that this patient had been wearing a denture, a full plate properly made and tight-fitting, that the apical ends of the abscessed roots left after extraction were underneath the rim of this plate, and the latter exerted more or less pressure over the infected area through the very thin layer of bone on the external surface of the maxilla. The removal of this pressure by extraction of the tooth roots resulted in prompt relief. Of course the patient was instructed not to wear the denture for a few days, thus removing the pressure. I do not believe it was entirely a reflex proposition, the relief of pressure over the

infected area I believe explains the quick relief from pain.

Dr. Marks commented on unerupted teeth: A great variety of symptoms may be caused by an unerupted tooth, persistent headache being one of the most common. We have had quite a number of such cases where no relief was obtained until the unerupted tooth was removed. Severe pain is often caused by pressure of the tooth which cannot erupt, due to pressure of crown end against other teeth or root end on nerve trunk. In other instances the normal membrane around the crown end of the unerupted tooth may become damaged and infection occur. This infected membrane if left in situ becomes cystic and may cause destruction of a considerable part of the mandible or even half of the maxilla. I have seen two pathological fractures of the mandible resulting from cystic membrane around the crown end of unerupted teeth. Naturally the tooth that cannot erupt, the membrane remains there, and at the normal time of eruption say twelve years for the second molars, seventeen or eighteen years for the third molar (wisdom tooth) there being no friction on the crown end of the tooth, as there is when it erupts and the membrane has served its purpose, thereafter being a potential source of infection, or cystic degeneration. Cases have been reported where continued trauma and irritation of an impacted or partially unerupted tooth finally resulted in malignancy of the overlying tissue. In my opinion all impacted teeth, especially those underneath the floor of the maxillary antrum, should be removed without delay as they are potential if not active sources of trouble, and the same can be said of most devitalized teeth.

I am grateful to the members of this section for the privilege of presenting my paper and for the liberal discussion it received.

W. P. Drake, Bowling Green (in closing): I wish to thank the gentlemen for their liberal discussion. One of the main points I wanted to make was that surgical attacks on the ethmoid have been much too frequent when probably the antrum or the frontal sinus was primarily at fault. By directing our attention to the latter we will get better and more permanent results than by attacking the ethmoid.

Referring to Dr. Heitger's remarks: I did not intend to criticize the Halle operation particularly. Mosher makes a different incision than that employed in the Halle procedure. It is recognized, of course, that not everyone can perform the operation as successfully as Halle himself.

It is easy for any of us to make the diagnosis in acute sinus infections, but difficulty is sometimes encountered in chronic cases, and for that reason our attention should be particularly directed to the latter class. Regardless of what surgical procedures may be employed, all path-

ological tissue should be removed.

Regarding the roentgen-ray: I realize that this is not an infallible method of making the diagnosis in sinus disease, but after all I would dislike to do without it. Whenever the roentgen-ray picture of the maxillary antrum shows a shadow I believe it is pathological.

INFECTION, PRESENTED AT AMERICAN RHINOLOGICAL, LARYNGOLOGICAL AND OTOLOGICAL SOCIETY.*

By J. A. STUCKY, M. D., Lexington.

Instead of presenting a paper of my own on the topic of focal infection, I thought it would be more interesting and profitable to present an abstract of the symposium on focal infection as given at the American Rhinological, Laryngological and Otolological Society which met in Montreal, Canada, in June, 1926. It is often advantageous to know what other men in different parts of the country are doing in our line of work and inasmuch as I was the only representative from our state at this meeting, it is a pleasure and privilege to bring this abstract to this section.

The topic, from the standpoint of the internist, was presented by Dr. Judson Daland, Philadelphia, from the standpoint of the Otolaryngologist, by Dr. P. G. Goldsmith, of Toronto, from the ophthalmological standpoint, by Dr. E. C. Rice, Philadelphia; and from the standpoint of etiology, by Dr. Jas. G. Dwyer, New York. Unfortunately I was unable to get an abstract of the paper of the latter. The symposium was discussed very freely by a large number of men and I have mentioned what seemed to me the most important points touched upon by twelve of these, since it would be impossible to mention all.

Dr. Judson Daland lists the variety of disease which may result secondarily from a focus of infection. In adult tonsil or sinus foci, he shows these structures to be fertile soil for anaerobic bacteria capable of being infected either from teeth, other sinuses or the blood. Organisms innocuous in one situation become highly virulent in another, especially when aided by lowered resistance. Absence of symptoms is not an indication of absence of toxemia and the smallest foci may be a serious menace, protection only being secured by complete eradication. In the absence of symptoms patients often harbor foci until late in life, without treatment, in spite of a history of tonsillitis in early life. Examination of the blood aids when symptoms are

absent, and often shows a low leucocyte count with increased percentage of lymphocytes, with or without mild secondary anaemia. Diagnosis of tonsil infection made largely on a history of previous throat trouble, condition of the lymphatic glands, appearance of pillars with cultures from the bottom of the tonsil crypts. Deeply buried tonsils are more suspicious than simply hypertrophied ones. Sinuses as foci of infection are less important than the tonsil, with less severe symptoms. In a sinus already draining satisfactorily, absence of pus does not exclude absence of focus, the culture often indicating a virulent organism. The x-ray is not an infallible means of diagnosis, which must sometimes be made by exclusion. The complete surgical removal or drainage of focus is most effective. If vaccines are used they should be made immediately from suspected material with the fewest possible transplants. These are a useful adjunct to surgery and are beneficial to the patient but should be administered very carefully.

Dr. P. G. Goldsmith considers it the chief duty of every otolaryngologist to see if focal infection exists in the ear, nose or throat, and whether the general symptoms require this being dealt with surgically or otherwise should be decided by the internist unless all symptoms are referred to local region. Establishing the existence of a focus requires a careful history and examination, followed by careful palpation of neck, regional glands of tonsil and naso-pharynx. Important signs of septic tonsils are glandular enlargement, fixation and tenderness with cultural growth of streptococcus. The removal of such glands may be indicated, the patient may request it, but the general condition may be aggravated by the operation and perhaps it had best be postponed until a time of quiescence. In any acute sinus infection the first inflammatory sign is the production of protective antibacterial serous exudate, which should not be disturbed by washing or spraying. This stage is termed sinus infection, sinusitis being reserved for the latter stage where true pus is found.

Routine examination of the nose, for character and source of abnormal secretions, transillumination, shrinkage, re-examination, postnasal rhinoscopy, cleansing and suction, re-examination with mirror nasopharyngoscope, cleansing, taking of cultures and washing antrum if pathology is suggested by transillumination. X-ray is only of confirmative value and must fit the rest of the picture. Ethmoid suppuration may exist with infection of frontal sinus or antrum. When antrum washings are clear and pus is seen in the middle meatus, then it must be coming from the ethmoid or frontal, and if washing

*Read before the Eye, Ear, Nose and Throat Section of the Kentucky State Medical Association, Frankfort, Ky., September 21, 1926.

from the latter can be shown clear, it is from the ethmoid. The large infected cell in the middle turbinate may contain pus as well as the posterior ethmoid cells which drain usually into the nasopharynx. Diagnostic puncture of the ethmoid is warranted only in cases where the eyesight is at stake. Simple transitory oedema of the ethmoid mucosa often appears and disappears without formation of pus, being probably of vasomotor origin and not a mark of a true focus. Sphenoidal disease is best diagnosed by exploratory puncture and irrigation through the anterior wall and not through the ostium. Secretions from this sinus as well as from the posterior ethmoid may gravitate into the oesophagus or larynx and cause systemic symptoms. While in the present status of the relationship between the posterior sinus disease and optic neuritis, some cases recover spontaneously, yet ventilation of obstructed side of nose is followed by such good results one cannot withhold this procedure in the face of rapidly failing vision.

Dr. Earl C. Rice says that increased co-operation between the profession of medicine and dentistry has lead to greater interest on the part of the latter in the patient's general condition. Oral and dental sepsis are important factors in the etiology of disease and potential foci of infection. Development of dental pulp and its surrounding dentine results in a highly organized and vascular surface capable of becoming infected by either gross or microscopic dental caries. Initial hyperaemia and vascular dilation lead to pain followed sometimes by strangulation and gangrene, since the lymphatics provide no outlet for the effusion. Such infection may occur in non-carious teeth and without special symptoms and necrotic dental pulp may exist entirely unsuspected. Pathological examination of pulpless teeth wholly symptom free have shown them to be definitely infected and a menace to bodily health. Conservatism, in the face of good health, absence of symptoms, with negative roentgenogram would counsel against removal, but later myocarditis, cholecystitis, or corneal ulcer prove the folly of this point of view. Pulpless teeth cannot be proved positively sterile or infected before removal, but prophylactic measures in regard to suspicious teeth will be found best and most efficient form of therapy. Sharp curettes unless most carefully used may carry infection more deeply into the bone. Large granulomatous masses should be enucleated with dull instruments.

Dr. W. Gordon Byers states that from a table of constitutional diseases which have been complicated by iridocyclitis, exclusive of tuberculosis and syphilis, a large number are shown to be the result of focal infection in the teeth, sinuses and tonsils. Cases classi-

fied in former years as cardiac or renal, today probably as true focal infection, and in cases undiagnosed as to etiology an intestinal focus is probably at the bottom. Undemonstrated focus may not appear until aggravated by some illness or operation. Relapse in eye conditions may indicate a decrease or increase in the activity of the focus while other factors, like uric acid diathesis or fatigue may play an unsuspected but important part in the activity of the infection.

In the general discussion of this topic, Dr. Francis F. Emerson, Boston, emphasizes the responsibility of the laryngologist in finding the focus of infection, in which problem careful consideration of the history is of greater importance than inspection of the throat. Positive pathological findings may have no bearing on the patient's general condition. A decision on this is facilitated by the discovery of adjacent, enlarged, tender, tonsillar glands soon after occurrence of any throat infection. A corroborative blood picture and differential count are an additional aid in making a positive diagnosis.

Dr. Ross H. Skillern, Philadelphia, states that with the exception of the ethmoid, the accessory sinuses only rarely constitute a focus of infection, and more chronic the infection and purulent the discharge, the less the likelihood of their being the source of general toxemia. The presence of bloody, watery secretion is much more indicative of serious infection and need of surgical intervention.

Dr. Leon White, Boston, Mass., stresses the value of X-Ray in diagnosis of sinus infection, and inaccuracy of transillumination in detecting the presence of thickened mucous membrane, which condition is more indicative of focal infection than the presence of pus. All roentgenograms of teeth should be passed on by an orthodontist not roentgenologist and the teeth suspected as a focus before the tonsils or sinuses.

Dr. George L. Richards, Fall River, Mass., urges more careful attention to the general hygiene and diet in the hope that this will lead to a diminution in the need of surgical treatment.

Dr. Lewis Coffin, New York City, feels that all simpler means of treatment, as attention to the intestinal tract, should be tried before suspecting the teeth, tonsils and sinuses.

Dr. Geo. MacKenzie, Philadelphia, calls attention to the form of neuro-labyrinthitis of focal infection origin, recently occurring in semi-epidemic form, first described years ago by Alexander.

Dr. Edwin McGinnis, Chicago, points out the difference in virulence between staphylococcus found in the nose and that recovered from infected bone or carbuncle, and the fact

that the removal of a local focus not always benefit systemic conditions like nephritis.

Dr. William Mithoefer, Cincinnati, outlines the method of examination of tonsillar detritus by subjecting expressed concretions to microscopic examination, finding that soft ones contain many lymphocytes while hard ones have but few, showing they are less indicative of infection. He considers palpation of the glands on the floor of the mouth an important procedure.

Dr. Burt R. Shurly, Detroit, cautions against the danger of "lighting up" an early pulmonary tuberculosis by too hasty removal of supposed foci under anaesthesia by ether.

Dr. Lee Hurd, New York City, cites frequent occurrence of foci without symptoms urging that development of these be the signal for a thorough examination of the patient from every angle. He further calls attention to the inadequacy of tonsillectomy if remnants of lymphoid tissue in the pharynx continue to act as a focus.

Dr. Charles Robertson, Chicago, comments on the rapid post-operative recovery in patients who bled freely at the time of operation, suggesting that this unintentional "blood washing" might be beneficial to the body's resistance.

Dr. John J. Shea, Memphis, describes his method of antral irrigation and culture and findings on allowing washings to stand. He urges that all patients with focal infections be placed on a sugar free diet.

Dr. Stucky, closing:—Not in many years has a symposium on any topic brought forth more general discussion than this one. You will note that several made the diagnosis of sinus and tonsil disease primarily on history rather than the appearance of the case. This was especially emphasized by the internist and otolaryngologist, but the former was more positive in his desire to have removed every possible focus of infection, regardless of its location. The otolaryngologist, as evidenced by his paper, was more careful and painstaking in arriving at his conclusions before advising operation, than any man I have heard read on this subject. The detail of examinations in his office, as I saw in a number of instances, was more minutely carried out than his paper would indicate.

I believe that every otolaryngologist should establish the existence of a focus of infection, not only by obtaining a careful history and examination, but follow this with a careful palpation of neck and regional glands of tonsils and naso-pharynx. Often the clinical symptoms of pain and discomfort in the pharynx or nasopharynx are due to an infection or toxemia in other portions of the body. Especially did I approve of the caution

against washing and spraying in cases of suspected sinus involvement, and would emphasize that most of the muco-purulent secretion, that is supposedly washed from the sinuses after puncture, really comes from the meati of the nasal cavity, and if these are carefully emptied and cleansed, both anteriorly and posteriorly, before the puncture and irrigation is done, we will be surprised how few sinuses contain muco-purulent secretion.

I am quite in accord with Goldsmith that the first decided clinical evidence of acute sinus infection, which is so frequently confirmed by transillumination or X-Ray, is the production of a protective antibactericidal serous exudate. This with the swollen, turbid condition of the lining of the sinus gives rise to a decided shadow which often speedily subsides under systemic treatment and keeping the nose thoroughly cleansed. The sinus condition is made worse and prolonged if disturbed by frequent puncture and washings. The emphasis placed upon the transitory oedema of the ethmoid mucosa, which so often appears and disappears without the formation of pus, probably of vasomotor origin and not a mark of a true focus, is a diagnostic point which I think should be stressed and surgical judgment should be used before resorting to operative procedure.

No part of the symposium excited more interest than did that from the dental standpoint, and the reader of this paper, Dr. Rice, had more interested groups around him in the lobby after adjournment than is usually the case at national meetings. The one point he made and which I desire to emphasize, because I have seen the unpleasant results following vigorous curettage after extraction, was that "sharp curettes unless most carefully used may carry infection more deeply into the bone. Large granulomatous masses should be enucleated with dull instruments." In a number of cases I have seen osteitis with slow and painful recovery following free curettage and later there was so little left of the ridge of the alveolar process that it was with difficulty the patient could wear a dental plate.

I was quite in accord with the ophthalmologist, Dr. Byers, who emphasized that relapses in many eye conditions, while they may indicate a decrease or increase in the activity of a focus, that other factors like (so-called) uric acid diathesis or fatigue may play unsuspected but important parts in the activity of the infection.

I heartily agree with the discussion made by Doctor Emerson, Skillern, White, Richards, Coffin, Shurly, Hurd and Shea.

DISCUSSION:

E. C. Hume, Louisville: The point Dr. Rice mentioned in his paper about dentists being more generally interested in the health of the entire human being than merely the health of the oral cavity, brings to my mind the fact that the Carnegie Foundation has recently made a survey of dental education in the United States, including all dental schools, and their findings are something like this: That the future dental graduate is to have, of course, his doctor of dental surgery degree as now, but he must have a distinct medical outlook, that he must be in a sense an oral specialist of medicine, that the main part of his professional education is to be along the lines of health service, not merely mouth repair. For some time past we have tried to inculcate these principles in our dental schools.

Another important feature in Dr. Stucky's report is that in quite a few instances teeth may have gangrenous pulps and yet some of them are X-ray negative. What are we to do under such circumstances? The only way we know to arrive at a definite diagnosis is by the use of an apparatus which we call a pulp tester, an electrical apparatus that will give a response in the event the tooth is vital and gives no response if it is devitalized. I have found such conditions to exist in quite a number of instances.

An additional phase of this work has been a distinct surprise to me personally, and that is the number of people with apparently normal teeth that are devitalized who are luetic. It is astonishing to see how many of them have a positive Wassermann reaction. This has been an indication in my practice to have a Wassermann test made in every instance where the patient loses the vitality of apparently normal teeth. Thus far in a limited number of cases it has been surprising the high percentage of these individuals that have lues as shown by the Wassermann reaction.

The curettment that Dr. Rice condemns I think is what is known as radical curettment where a large curette is placed in sockets of teeth and by a ruthless curettment cause a general destruction of the entire alveolar ridge. This renders it difficult for the patient to wear an artificial denture. There is no condition I am sure where surgical preparation of the mouth, either for dentures or the elimination of disease, that cannot be affected. In most cases, the alveolar ridge may be slightly different from what one might like it for replacement. It is the same old story. A man who would amputate a limb must get rid of the gangrenous foot if amputation is needed whether the patient expects to wear an artificial limb or not. If the surgeon does not do this he realizes he is going to lose his patient. The same thing is true of surgery about the mouth, one must get rid of the diseased tissue even though he may have to

sacrifice some portion of the foundation for the denture. However, that should not be resorted to except in extreme cases. Radical curettment should never be done under the maxillary sinus unless there exists a positive reason for so doing.

M. C. Baker, Louisville: I enjoyed very much the report made by Dr. Stucky. He has presented sufficient material for a whole evening's discussion.

I was particularly impressed with two points, one is chronic exhaustion toxemia, the other is his remarks concerning sugar free diet. We had Dr. Shea in Louisville at one time and he gave us a splendid paper reporting excellent results from the procedures he described. We also had a striking paper by Dr. Ochsner, of Chicago, on chronic toxic exhaustion of chronic fatigue.

I think we have gone a little too far on the matter of focal infection. There are many sides to the question. My idea is the individual may have exhaustion of the nervous type, and an extremely nervous patient will easily merge into the state of exhaustion, we may have disease arising from physical exhaustion, and from excessive tire of one or more organs, and I think we are too much inclined to place the blame on one particular organ or situation where disease may exist. For instance, if the individual has an abscessed tooth, diseased tonsils, diseased sinuses, tendency to a diseased gall bladder or appendix, we are too ready to operate for these conditions and let it rest at that. Many of us seem to forget that the patient should be treated as a whole.

Time and again, and this is particularly true in children, we find patients coming in with swollen turbinates, inclined to nasopharyngitis, swollen mucous membranes, coryza, etc. If such patients are placed upon a sugar free diet, the ingestion of sweets, candies, etc, forbidden, you will find the treatment will be materially shortened, the patients will quickly improve and have a tendency to get well.

Whenever a patient is in that state of exhaustion and toxemia which has been described, of course the symptoms are soon going to point to whatever tendency he has, whether these symptoms have reference to the teeth, tonsils, the sinuses, or whatever it may be. We must remember in that state of exhaustion or toxemia his symptoms are going to soon point the way for us. It is as much our duty to remove the toxemia as it is to remove any certain diseased point.

I have frequently noticed these conditions in hay fever cases, also those with intense coryza, rhinitis, etc. I had a patient not long ago who had been taking huge doses of milk of magnesia every night which he said had been recommended as a good remedy for his "cold." If patients of this class are given a teaspoonful of sodium bicarbonate in a glass of water three

times a day for a few days you will find the so-called cold will begin to improve immediately and the rhinitis will disappear.

We ought to pay greater attention to removing the toxemia and increasing vital resistance, then the focal infection will often have a tendency to take care of itself. This will not mean a surgical operation every time.

Another experience I have had is to give the patient before tonsillectomy liberal doses of Calcium Chloride. This has a tendency to prevent hemorrhage and also to keep the patient alkalized and increase his resisting power.

Dr. Stucky has given us a very interesting report. I think 't is our duty to look beyond the point of focal infection. If we raise the patient's alkalization and resisting power, the point of focal infection will often take care of itself.

SOME FEATURES OF GLAUCOMA IMPORTANT TO THE GENERAL PRACTITIONER.*

By JOHN O. McREYNOLDS, M. D., Dallas, Texas.

In presenting a paper on this subject, it is far from my purpose to indulge in any criticism of the general practitioners, but rather to suggest an extension of their field of labor in harmony with their scientific attainments and well developed sense of professional responsibility.

On behalf of the ophthalmologist, I must express our profound appreciation of the generous spirit of the general practitioners in turning over to us so completely practically all of their work in ophthalmology. Much of this practice they could handle with splendid satisfaction and with only a small amount of additional preparation and effort. I have many times heard some of my friends of the general profession proclaim that they did not undertake any kind of eye work. This is surely a very liberal attitude, but I am going to make an appeal to the general profession to share with us more of this work and more of the responsibility. I am convinced that this would redound to the credit of the medical profession and to the benefit of the public. A man who can fathom the deep seas of serology, neurology, and internal medicine could add a very helpful service to practical ophthalmology if he would only divest himself of the notion that the eye is clearly beyond the domain of his proper activities. The matter of differential diagnosis in ocular diseases is sometimes an imperative call upon the family physician. He is the only one, perhaps, in a position to warn the patient of the perils confronting him. He is the one who must ini-

tiate measures of relief or overcome the error of placid inaction. It is his knowledge of the prognosis in ocular affections that must give the patient a measure of his danger and a measure of the reasonable hope he may cherish.

One of the most important ocular diseases involving the responsibility of the general practitioner is that of chronic glaucoma. Its significance depends upon the fact that it is exceedingly easy to confuse this condition with other intra-changes not associated with pain or other distressing manifestations calling for immediate relief. Many times the patient depends upon his family physician to guide his conduct in the earlier stages of ocular affections, intending to submit his condition to an oculist at some later period. The great importance of chronic glaucoma, therefore, to the general practitioner hinges upon the fact that there may be some difficulty in the earlier stages in differentiating chronic simple glaucoma from some other conditions that do not demand such immediate attention. From a practical point of view, the mistake most frequently observed is in confusing a chronic glaucoma with incipient cataract or various changes in the fundus.

With reference to the first two conditions—chronic glaucoma and senile cataract—you might say that there are many points in the subjective manifestations that are quite similar, but the prognosis and treatment are so entirely different that an accurate differentiation is extremely necessary. In the first place, whatever ground is gained by a chronic glaucoma, as a rule, is permanently held, and, therefore, the important consideration is to prevent the advance of the glaucoma; whereas, in the matter of incipient cataract, uncomplicated, there is no great loss in the final result, even if there is considerable delay, and the patient may be able to secure perfectly useful vision whenever the lenticular opacities have advanced to a point that requires relief—in other words, glaucoma simplex requires early diagnosis and prompt attention to prevent irrevocable damage; whereas, senile cataract can be attended to at any time that the patient requires additional vision. In considering these two conditions, we might divide the subject into two divisions: first, the subjective manifestations, and, second, the objective manifestations.

SUBJECTIVE MANIFESTATIONS.

Under this head, we might consider first, the element of pain, or physical discomfort. In both of these conditions there is practically no pain at any time unless there should supervene on the chronic glaucoma an acute or sub-acute process, in which case pain would certainly be present. There is in each case a great deal of diminution in vision, but the

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character of this diminished vision will be likely to show certain characteristic features in each case. In chronic glaucoma, there may be, not only diminished vision for the point of fixation, but even in advance of this there may be a marked contraction of the visual fields, so that the patient may preserve central vision for an indefinite period, while his field of vision is steadily contracted down to the point of practical annihilation of the visual field without the patient being aware of such an impending calamity. Cases of this kind will frequently go for a change of glasses and they may find that it is still possible to secure for them fairly acute central vision, and on this account they may be led into the error of thinking that nothing of a serious nature is transpiring in the globe, whereas, the eye may be undergoing destructive changes that cannot be remedied. In senile cataract, however, there is more of a general dimness throughout the visual field, the central area not being more affected than the peripheral zones. It is true that the exact amount of visual disturbances in senile cataract will depend upon the special form of cataract which is present. In some forms the opacity is fairly evenly distributed throughout the substance of the lens, while in other cases it may be confined to certain areas of the lens and, consequently, the vision will be impaired, especially under those conditions in which the rays of light are forced to pass through the lenticular opacities. It is also to be observed that there are certain subjective visual sensations in both of these conditions that are worthy of regard. In the case of glaucoma, in the event there should be subacute or acute exacerbation, there would result certain modifications in the dispersion of light, in consequence of which the rainbow rings, or halos, would form around a lighted candle held at a distance. These subjective sensations are produced by a certain cloudiness of the cornea leading to the breaking up of white light into its primary colors, or in producing elongations of the images formed by the entrance of light through the cloudy media. In the case of cataract, where the index of refraction is different in different sectors of the lens, it will be possible to have polyopia or multiple vision, due to the fact that this irregular refraction of the lens throws different images upon the retina. In neither of these conditions is there any notable inflammatory reaction or any discharge whatever. In each case, there is not much difference in the size, shape, or mobility of the pupil until visual acuity is reduced to a considerable degree.

OBJECTIVE MANIFESTATIONS.

The objective manifestations are extremely important. In glaucoma simplex there would generally be a somewhat more shallow

condition of the anterior chamber and the pupil would respond more sluggishly to the impression of light. The ophthalmoscopic and perimetric examinations would constitute the most important features in the differential diagnosis. The ophthalmoscope would show a distinct recession in the plans of the lamina cribrosa. There would be the characteristic break in the retinal vessels as they would pass over the scleral rim of the optic disc. There would also be, as shown by the perimeter, a marked retraction of the visual field, and the dioptric media would remain clear; whereas, in developing cataract the dioptric media would be less accurately outlined, but from the examination possible it would probably be easier to distinguish that there were no alterations in the nerve head itself, or in the blood vessels, but the fundus and the field of vision, as shown by the perimeter, would be unaltered. The intraocular tension, as determined by palpation, or a tonometer, would show no alteration whatever in the development of senile cataract; whereas, in glaucoma simplex, there would be a slight elevation in the tension, certainly at intervals, although there might be times when the intra-ocular tension would be normal. It is the slight increase in the intra-ocular pressure continuing for a protracted period that explains the absence of pain and the diminished vision in glaucoma simplex.

In all of these cases, where it is desirable to make an ophthalmoscopic examination and a dilated pupil is to be obtained, it is necessary to use some mydriatic whose action will rapidly disappear, such as euphthalmine, cocaine and homatropine, and, then, it is important to keep the patient under observation while the myotics are used to bring back the pupil to its normal size before allowing the patient to pass from observation, because whether the patient has already developed glaucoma or simply has a predisposition to it, the dilation of the pupil may help to determine the onset of the condition, and, under such circumstances, a patient with senile cataract could have added to this malady, also, an attack of glaucoma. In all these cases, it is desirable to keep the patient under observation, because of the fact that the picture may change from time to time, which would necessitate an alteration in the general management of the case.

It is beyond the purpose of this paper to enter into a discussion of the treatment, further than to state that in the case of glaucoma simplex, the treatment should be instituted at the very beginning and should consist either in the judicious employment of measures to reduce the tension by instillations of myotics, or recourse should be had to surgical measures intended to produce a freer filtration,

these measures being especially the different forms of anterior sclerectomy.

With reference to senile cataract, the important consideration is that there is no necessity that the patient should be allowed to become blind with senile cataract in order to secure a successful result from operative procedures. The lens can be removed just as successfully at one period as at another, and the patient is entitled to the increased vision whenever he reaches a point where he is unable to discharge his usual duties of life.

ACUTE CONGESTIVE GLAUCOMA.

Let us now study together the features of acute congestive glaucoma. Acute glaucoma is a condition of extreme importance, not only to the patient and the oculist, but the general practitioner as well, because the responsibility of making a correct diagnosis and instituting appropriate treatment, many times will devolve primarily upon the family physician. It falls to his lot ordinarily to see the patient first, and it is in the early stage of acute glaucoma that the greatest good can be accomplished by an accurate diagnosis and by judicious management. There is no other condition that requires so imperatively correct treatment from the beginning, because, if correct management is employed, either in the way of active applications or a dilatory practice, disastrous results that cannot be overcome by any amount of subsequent diligence and care may speedily follow.

It is especially important that this condition should not be confounded with another condition with which, unfortunately, it is most likely to be confounded, namely, acute plastic iritis. The importance of this differentiation depends upon the fact that the treatment in these two conditions is diametrically opposed. In the case of acute congestive glaucoma, the great advantage to be sought is a speedy reduction in the tension, and this is accomplished most successfully by causing a marked contraction of the pupil, which results in pulling away the root of the iris from the filtration angle, thus opening, to some extent, the spaces of Fontana and the canal of Schlemm; while the object to be accomplished in acute plastic iritis is just the reverse—a speedy dilation of the pupil to prevent permanent adhesions between the iris and the anterior capsule of the lens.

Let us now consider the important points of differentiation in diagnosis between acute congestive glaucoma and acute plastic iritis. The differential points may be considered under two general headings, the subjective manifestations and the objective manifestations.

SUBJECTIVE MANIFESTATIONS.

I. Pain.—The pain in acute congestive glaucoma quite resembles that in acute plastic

iritis inasmuch as the pain is distributed not only in the region of the eyeball and the orbit, but over the entire side of the head. However, the pain is much more acute in its character, much more rapid in its development, and much more extensive in its distribution in acute congestive glaucoma. It is frequently mistaken for a severe neuralgia, so the patient not infrequently comes to us with a history of having gone blind with neuralgia, when in reality he has gone blind with acute congestive glaucoma characterized by intense pain resembling neuralgia.

The constitutional manifestations are likewise more pronounced in acute glaucoma. There may be a distinct depression, with nausea and vomiting, which seldom occur at the onset in acute iritis. In both of these conditions, the pain is deep-seated in character, because of the fact that it is produced by pressure upon the deep-seated sensory nerves of the globe, and is in marked contrast with the superficial, scratching pains that are present in conjunctival inflammation. While the pain is excruciating, the sensitiveness of the cornea to the touch of the finger is rapidly reduced in acute glaucoma, because of the paralyzing pressure upon the sensory nerves, but the sensitiveness of the cornea to the touch is preserved throughout the course of acute plastic iritis.

2. Vision.—The vision is speedily reduced, or actually annihilated, many times within a few hours, in cases of acute congestive glaucoma, on account of the rapid development of increased intra-ocular pressure, interrupting the circulation within the globe, exerting marked pressure upon the optic nerve fibres as they come through the lamina cribrosa, and also by producing an edema of the cornea and a cloudiness of the other dioptric media. The vision in acute iritis is slightly diminished by the accumulation of plastic exudates in the line of vision, but this result does not rapidly supervene. In addition to the loss of central vision, there is frequently a reduction in the field of vision in acute glaucoma, which may be made out in the earliest stages of the trouble, particularly if there have ever been preceding acute attacks, or a preceding chronic glaucoma. This reduction in the field of vision may consist in a concentric limitation of the field with a special reduction on the nasal side, or with various forms of irregular scotomata. It may also be observed that in looking at a lighted lamp in a room, for instance, the patient may distinguish a kind of halo around the light somewhat resembling the appearance of a street light as looked at through a frosted window pane on a winter night. This halo is due to the cloudiness of the cornea produced by the edema consequent upon the intra-ocular pressure, and it may

assume the appearance of rainbow rings around the light.

3. Discharge.—There is no purulent, or muco-purulent discharge, as an essential feature of either acute glaucoma or acute iritis, because the pathological process is intra-ocular rather than extra-ocular. However, there is in both instances a profuse flow of tears.

OBJECTIVE MANIFESTATIONS.

In both of these diseases the eye is intensely red, but in acute glaucoma there is a more marked distinctness of the episcleral veins and anterior ciliary veins, so that they stand out in bold relief because of the interference with the return circulation occasioned by the intra-ocular pressure. The eye assumes a kind of purplish hue on account of the venous stasis. In acute iritis there is more of a diffused pink color surrounding the limbus and extending over the globe. In acute glaucoma the cornea rapidly assumes a steamy appearance, resembling a pane of glass that has been breathed upon, while in acute iritis the cornea remains perfectly clear. The pupil in both cases is relatively immobile, but is especially so in acute glaucoma, and in this condition is widely dilated, while in acute iritis the pupil is inactive but contracted, unless a myriatic has been used, in which case the iris will show adhesions to the anterior capsule of the lens, giving an irregular outline to the margins of the pupils. The anterior chamber in acute glaucoma is much shallower than normal and may be entirely obliterated, the iris and the lens pressing against the cornea, while in acute iritis the depth of the anterior chamber is unaltered. If the media is sufficiently clear to permit of an ophthalmoscopic examination, the fundus in acute glaucoma will show some reduction in the caliber of the retinal arteries, with a marked increase in the caliber of the retinal veins, which are distinctly tortuous in their course, on account of the interference with the return circulation. There may be hemorrhages, also, especially of the venous type in acute glaucoma, and these are unusual in acute iritis. The optic disc, in acute glaucoma, if the condition has supervened upon a more or less chronic trouble, will show a marked excavation which is total in character and presents characteristic features that distinguish it from other forms of excavation of the optic disc. The entire lamina cribrosa is pushed backward by the intra-ocular pressure, so that the retinal vessels appear broken in their course over the rim of the sclera, while in atrophy of the optic nerve, there is a pallor of the disc and a slight diminution in the prominence of the disc, but with no actual recession of the lamina cribrosa. In a physiological excavation of the optic disc, the central portion may appear deeply excavated,

while the peripheral portions, containing the normal number of normal optic nerve fibres, will show no such depression.

The essential condition of acute congestive glaucoma is the increase in intra-ocular pressure, and upon this one circumstance develop all of the symptoms enumerated. The eyeball may vary in hardness from a very small increase, capable of being appreciated by the touch, to those cases of extreme hardness in which the eyeball is apparently hard as marble. This intra-ocular pressure is variously estimated, by palpation with the fingers, or, more accurately, by a tonometer, which measures in millimeters of mercury the intra-ocular tension. In acute plastic iritis there is no increase of importance in the intra-ocular pressure.

If I should utter a single sentence that would emphasize most the dangers of this condition, I would say that whenever a patient becomes suddenly blinded, or has his vision rapidly reduced, associated with pain radiating to the brow, and the side of the head, with a dilated pupil, with a shallow anterior chamber, with halos around the light, and with increased intra-ocular pressure, caution the patient to secure at once not dilation of the pupil, but a contraction of the pupil, and follow this with a careful investigation into the exact condition. Finally, in all cases of diminished vision, no time should be lost in ascertaining, as accurately as possible, the exact situation, so that remedial measures may be adopted promptly and not indefinitely postponed in the vague hope of better days.

It is a matter of utmost humanitarian and economic importance to secure vision for a patient when it is possible to do so rather than have the patient spend the final years of life in the fruitless waiting for complete blindness. This protracted delay simply results in the loss of general physical strength and endurance, so that when the patient finally reaches the stage of complete blindness he may be so enfeebled by the various infirmities of age that he is not in so favorable a condition for any kind of operation, and has such a poor remnant of life left that he may not have the courage and confidence and strength to undergo an operation for the restoration of sight, and thus, hesitating on the brink of the grave, passes on from the darkness of this world into the deeper darkness of the great unknown.

Hernia of Ovary.—A survey of the literature has convinced Moore than the correct number of cases of inguinal hernia recorded to date, with the ovary as the only content of the sac, is 137. To this number he adds one case.

INTESTINAL MALIGNANCY: REPORT
OF TWO CASES.*

By L. WALLACE FRANK, M. D., Louisville.

I have two pathological specimens to exhibit,—No. 69 and No. 67. The history of No. 69 will be given first, and No. 67 second.

Case I.—H. R., male, aged forty-three years, consulted us July 31st, 1926, complaining of less weight and strength. He had never been sick before. Family history negative for tuberculosis and malignancy. The patient stated that two months ago he began feeling badly, and since then he had lost several pounds in weight.

His appetite was poor and he noticed discomfort on pressure in the right upper abdomen. He had no discomfort after meals, except for fullness at times. Bowels regular, no blood or mucus in stools. In losing weight, strength and energy. Otherwise the history is negative.

Examination reveals a thin, anemic man whose heart and lungs are apparently normal. The abdomen is relaxed. In the upper right abdomen is a tumor the size of a man's fist. It is hard, nodular and a little tender. The mass is movable. Right kidney is palpable above the mass.

Blood count: Hemoglobin 90; erythrocytes 4,870,000; leucocytes 7,800. Differential: polymorphonuclears 63%, lymphocytes 23%, endothelials 12%, eosinophiles 1%, basophiles 1%. Urinalysis, entirely negative.

Roentgen-ray examination by Dr. C. D. Enfield shows normal heart, aorta and lung fields. The stomach and duodenum were entirely normal, and there was nothing in this examination to suggest adhesions, either gastric or in the region of the duodenum. The stomach and duodenum were empty at the end of four and a half hours. At the junction of the ascending and transverse colon a filling defect was noted on the film. A barium enema was given, and this revealed a normal rectum, sigmoid and colon upward to the proximal part of the transverse colon. The filling defect previously seen was again noted. No evidence of diverticula. The appendix was seen and appeared normal.

Conclusions: The filling defect mentioned at the juncture of the ascending and transverse colon is strongly suggestive of malignancy, without any obstruction of note. I am unable to say whether or not it is inoperable, but judging from the defect it is fairly well advanced.

This man entered the hospital August 2nd and was operated upon August 4th, at which

time the mass exhibited was removed. We made a right rectus incision seven inches long, the umbilicus being about the center. The cecum, ascending colon and hepatic flexure including the mass were freely mobilized. There were some enlarged glands in the mesentery and one near the aorta. We resected fourteen inches of the terminal ileum, removed the appendix which was normal, removed the ascending and transverse colon a little to the left of the midline, and made a side-to-side anastomosis of the ileum into the remaining transverse colon. An enterostomy was then done proximal to the anastomosis.

The man had no symptoms of peritoneal irritation following the operation. On the fourth day he began to expel feces per rectum, and on the seventh or eighth day the tube became loose and was removed. A small amount of pus drained from the enterostomy wound due to infection from the fecal discharge. Drainage continued for three weeks after leaving the hospital which he did the 28th of August. Since then he has gained twenty pounds in weight and is temporarily at least perfectly normal.

Pathological examination was made by Dr. Stuart Graves and the following in his report: General description: Specimen consists of 16 cm. of lower ileum, appendix, and 37 cm. of cecum and colon. Beginning 7 cm. distal to the ileocecal valve is a firm nodular area 7x10 cm. Lymph node 2 cm. in greatest diameter, firm, with grayish-white cut surface. Lymph node sectioned (entire bowel specimen saved for Dr. Frank). Few sections show loose fibrous structure with large islands of thin mucoid material in some of which are small clumps of glandular epithelium. Lymph node shows no evidence of metastasis. Microscopic diagnosis, colloid adenocarcinoma.

I would infer from this that the diagnosis was made from the gross tumor and not from the lymph gland, although clinically the gross appearance of the gland was unquestionably malignant.

Case II.—F. W., male, aged forty-six, was referred to us August 30th, 1926, with the diagnosis of hemorrhoids made by a very competent general practitioner. The history shows that since March, 1926, he has been having pain with each defecation, formerly there was some bleeding, but this had now ceased. He complained of frequent desire to defecate, sometimes as often as fifteen times daily, sometimes only passing blood and water followed by pain and the sensation of still wanting to defecate. He has no fecal movement without taking medicine, and lately has been using enemata. There are no other symptoms.

*Read before the Louisville Medico-Chirurgical Society.

Physical examination showed nothing. In his rectum just above where the tip of the examining finger could reach was a rather hard irritable looking growth which was visible with the rectum dilated. On the gross evidence we made the diagnosis of malignancy. Blood examination showed erythrocytes 3,500,000, leucocytes normal. The urine was negative.

In handling this case we first anesthetized the man for more complete examination, and after emerging from the anesthetic he was told the nature of his disease. We felt this was advisable because he would have to go through a rather long procedure, that a colostomy would be necessary, and we did not want to remove the growth without informing him definitely that he would have to defecate through his abdomen the remainder of his life. We believed the case was operable and the best thing to do was to remove the growth surgically, but if he refused the only other procedure was to try radium and destroy the entire lower rectum by radiation. He left the matter to us and we operated, doing first a colostomy followed ten days later by radical removal. At the time the colostomy was made we carefully examined for internal metastases, in the mesentery, around the rectum, and in the liver. No metastatic involvement was found. Ten days later we again opened the abdomen by an incision two inches to the inner side of the first and sectioned the loop of sigmoid below the colostomy turning in both ends and dissecting the sigmoid downward to about the second sacral segment and freeing it from the urinary bladder and from the lateral pelvic wall. The whole mass of sigmoid was pushed below the peritoneal reflection and the peritoneum then closed above it and the abdominal wound closed. We then made an incision encircling the anus and the sphincter muscle directed upward along the side of the rectum clamping as we went, and removed about eight inches of the sigmoid and rectum. Only the superficial vessels were ligated and the clamps left in situ. One enlarged lymph gland was found.

The growth was examined pathologically by Dr. Stuart Graves whose report reads: Specimen consists of resected portion of the rectum 110 x 80 mm. Beneath mucosa is a hard, infiltrating mass 40 x 5 15 mm. Lymph gland 5 mm. in diameter. Microscopic description: section of rectum shows a typical glandular neoplasm beneath the mucosa infiltrating a thickened wall. Glands are mostly lined with a single layer of columnar epithelium in which is seen an occasional mitosis. Lymph node is not remarkable except for some endothelials and lymphocytes in sinuses. Diagnosis: Adenocarcinoma of rec-

tum, chronic lymphnoditis; no evidence of metastasis. The lymph gland was soft and did not appear malignant from gross examination.

My reasons for reporting these two cases are that they are rather interesting, and represent two cases of malignancy of the colon and rectum, each seen recently, that were operable. The majority of patients with malignancy of the rectum and colon reach the surgeon in the terminal stages of the disease when removal is impossible. Furthermore, we wished to emphasize the method used in the latter case, i. e., the two or three stage operation which is in our opinion the procedure of choice. In the first case—cancer of the colon—we think the operation as performed has a decided advantage over the old Mikulicz operation in which the deeper glands are not touched. Where the operation can be performed in one stage as this was done then the gland-bearing area can be removed at the same time, in contrast to the orthodox Mikulicz operation of simply bringing a loop of the intestine with its attached mesentery through the abdominal wall.

DISCUSSION

Granville S. Hanes: With reference to the second case Dr. Frank reported, I wish to make a statement which has no direct bearing on the phases of the subject he discussed. This is an observation which has originated purely from my own experience; it is that carcinoma of the rectum does not occur in patients who have suffered from long continued, low-grade inflammation of the rectal structures. I have been interested in this type of chronic patients for more than twenty years, and I cannot recall one that has developed malignancy. Having been associated with Dr. J. M. Mathews for a number of years I had occasion to see and assist in the treatment of numerous patients affected with colitis, sigmoiditis, granular and ulcerated conditions of the mucosa of the terminal bowel; and not one, so far as I know, developed a cancer. It is my belief that tissues thus affected are immunized against the implantation of the causative element of cancer and its subsequent development. Has it not been the doctor's experience that these patients give no long history of gastro-intestinal disturbances, but a definite account of the symptoms common to cancer in the terminal bowel not associated with previous chronic inflammation? On account of the widely accepted belief that chronic inflammation does lead to cancer development in the rectum many patients who, in my belief, are in no danger of cancer are frightened into having operations done without substantial and justifiable reasons.

I think Dr. Frank selected the best known method for operating upon such cases as he has

reported. Following his procedure no attempt is made to preserve any structures that might aid in control of the bowel operating through the natural channel. After the operation the fecal evacuations must be through the colostomy, therefore extensive dissections are made with no fear of destroying muscles at the end of the bowel. When a malignant growth in the rectum or lower segment of the sigmoid is encountered, the facts concerning the various methods of operating should be thoroughly and patiently explained to the individual. When a colostomy is first proposed the patient exhibits a profound disgust and abhorrence at being left in such a plight. When, however, the chances for complete removal of the growth, the more easy control of the bowel through the colostomy and the minimum danger to life is understood by the patient, the decision will usually be made in favor of Dr. Frank's method of operating.

Of the total number of malignant tumors that occur in the rectum and sigmoid only a small percentage can be relieved by operation or any other method. A few, however, are seen where operations may be done with most gratifying results. I recall that Dr. Sherrill assisted me in performing my first operation for rectal cancer. The tumor was small and on the posterior rectal wall. We did a Kraske operation. A segment of the rectum was removed and an end-to-end anastomosis was made. There was a fistula for about five months. The patient has survived the operation for more than nineteen years and has had complete control of her bowels. After the fistula healed she experienced no consciousness of having had an operation. I have never since had the happy experience of removing a cancer similarly located with such gratifying results.

Some ten or twelve years ago Dr. Louis Frank assisted me in removing a large cancerous growth from the upper segment of the sigmoid. A temporary colostomy was done. The artificial opening was subsequently closed. The patient is now living with the lower bowel in apparently normal state, so far as function is concerned.

Of course, tumors are more easily accessible when found in the upper segment anywhere along the large bowel and are, therefore, removed with less difficulty than when they are located about the promontory or hollow of the sacrum.

With regard to metastasis or rectal cancer, I will say that it is less frequent in my opinion than many surgeons believe. Dr. William Mayo in a paper read in Washington several years ago commented on the rarity of metastasis in these cases as compared to metastasis in other parts. I have examined the viscera of patients affected with rectal cancer and have been astonished to

find no evidence of metastasis.

J. Garland Sherrill: Dr. Frank's report is particularly interesting. I understand the second patient he mentioned has returned to work, and hope it will be a complete and permanent recovery. Some cases of this type are really very gratifying. One was a man fifty years of age who came to me with malignancy of the sigmoid. The operation was complete resection and end-to-end anastomosis. The patient recovered, returned home, and is living eight years afterward. This case is recorded in my work on peritonitis. Another case came under observation in a woman of thirty with acute intestinal obstruction, and by the way most of these patients complain of acute obstruction as the first symptom. This woman was pregnant which made it quite a problem how much should be attempted. A malignant mass was found involving the ascending colon, and we did just what Dr. Frank has described, separated the outer peritoneum, turned the colon inward, made a complete resection of twelve inches, and completed an end-to-end anastomosis. The woman was placed in bed and carried her infant to term. The pregnancy caused diastasis of the muscles and she had a large hernia. With the advent of labor it was a question whether to perform Caesarean section and repair the hernia or postpone further operative work until she had her baby. The latter plan was decided upon and the baby was born without untoward incident. The hernia was repaired about two years later. She had some enlarged lymph glands removed at primary operation. At the second operation for hernia there was found no evidence of recurrence in the intestine or glandular structures. She afterward gave birth to another baby and is still living. I do not mean to say that all of these cases give this beautiful history, because they do not; but when we can operate upon even a few patients and improve the prognosis, it makes us much more optimistic about the results.

Another question in regard to the treatment of malignancy of the rectum and sigmoid is what can be done by means of the roentgen-ray or radium? Dr. L. W. Frank saw with me a gentleman who came to operation for malignant obstruction in the rectum or lower sigmoid. A colostomy was performed because it was the only thing we could do. After the colostomy an effort was made to secure reduction of the rectal mass by radiation, but the result was unsatisfactory. Another case presented, where a man came to operation for malignant obstruction, and it was found that he only had a small ribbon-like opening in one part of the intestine. It looked like one of the most favorable cases I had ever seen for resection and a complete operation, but when the matter was placed before the patient he decided in favor of colostomy. He refused to have anything further done and the growth

continued. I believe the removal of the intestine involved in this case would have proven curative. The patient's refusal to undergo radical operation deprived him of the chance for cure.

In investigating the subject a few years ago I found that sarcomata of the intestine are rare and they are followed more frequently and promptly by lymphatic involvement than are the carcinomata. Metastasis in carcinoma is more often to the liver through the blood stream than through the lymph channels. It is hoped that in addition to the simple mechanical removal of cancer in the abdomen beneficial results may be secured by radiation by means of either the roentgen-ray deep therapy or by radium. If this proves true it gives us a still better prognosis. Radiation has been disappointing in this field.

The surgeon sees patients with malignant disease earlier now than formerly because of the fact that routine examinations are more frequently made of the intestinal tract and attention is thereby called to the disease. In the olden days such patients were first seen when acute obstruction developed without any previous history or symptoms, but sometimes by careful examination we found there had been constipation, sluggish intestinal function, occasionally diarrhea and hemorrhage. The patient being unable to evacuate the bowel normally, diarrhea is nature's method of getting rid of the waste material. In many cases little information could be gained by manipulation of the abdominal wall, in others a mass could be felt because of the obstruction. By means of the roentgen-ray obstruction to the fecal current can now be determined early when there is greater chance of saving the life of the patient by surgical procedure. The majority of these patients show early loss of flesh and cachexia finally develops. To be successful operation should be performed in the earliest possible stage of malignant disease, that is when the patient begins to complain of constipation or diarrhea and at times perhaps gaseous discomfort. These are the earliest signs.

I wish to congratulate Dr. Frank on the splendid manner in which he managed both of the cases reported.

Louis Frank: I wish to say, first, with reference to Dr. Hanes' statement about irritation, that I believe irritation acts in the production of carcinoma of the rectum just as does irritation of the lip from smoking, and this is also true elsewhere throughout the intestinal tract, notably at the pylorus. I think we are all agreed that practically every sphincter muscle of the body is subject to irritation. Whether or not there is anything in bacterial infection being preventive of malignancy I am not prepared to say. I also wish to say that the operation des-

cribed is not one that should be undertaken lightly with the idea that it is easy of accomplishment, either before dissection of the sigmoid and upper rectum, or afterward.

Rectal malignancy metastasizes just as does carcinoma anywhere else. These patients as a rule die from obstruction, however, and not from metastasis. Metastasis from rectal malignancy is, however, not early, it is a late manifestation, and that is one reason why I hope by means of roentgen-ray studies and more careful physical examinations we can bring patients with malignancy of the large and also the small intestine to operation earlier, just as we have been able to do with malignancy of the stomach and breast. Many of these patients are not seen by the surgeon until the disease has passed beyond the operable stage. In this country this is probably due to the fact that the public is not educated to the point of seeking frequent medical examinations as is done in some other communities. There is no reason why with careful examination, if we could get the public properly educated, that we should not see these patients earlier just as we do patients with tumors of the breast, and also at a time when there is greater hope of cure by surgical procedures. We know that the history of rectal malignancy often extends over a period of seven to nine years.

One advantage of opening the abdomen as a preliminary is that we cannot always determine prior to operation whether metastasis have already occurred, or even that the glands are enlarged, because in the abdomen they are deeply situated. Metastasis often occurs in the liver, and this is another reason why exploration of the abdomen should be made before any patient with malignancy of the rectum or colon is subjected to radical surgery. If metastasis has occurred in the liver we know the patient is doomed, and we also know what often happens when glandular metastasis has supervened. About the rectum, just the same as about the breast and about the colon, we may have glandular enlargement which may not be malignant but inflammatory in character. The mere fact that enlarged glands are present does not mean that the patient should not be given a chance. With the improvements that have been made in operations for malignancy, and with the additional hope that some assistance may be afforded by radium and the roentgen-ray, the outlook is less pessimistic than heretofore. We know that to be successful from a curative standpoint the operation must be radical regardless of what may be the functional or cosmetic effects or of anything else. The operation must be radical no matter what its effect may be on the patient, closing of the wound being a secondary consideration in situations where healing by granulation may be effected. When the matter is properly explained to the patient, objections

are usually not made to wide excision. In the method of procedure for rectal malignancy fecal fistula may afterward develop, but this is of little consequence compared to the saving of life, and, as Dr. Sherrill has well stated, in many instances the patient has no trouble following the operation.

The two cases reported are particularly interesting to me from the fact that the patients came to operation while the disease was still amenable to surgical measures, that is in the stage of operability. In the second case some of the glands in the mesentery were unquestionably malignant and the glandular enlargement was very widespread. Whether the patient will remain cured is a question. In removal the rectum was completely encircled. After dissection and freeing the sigmoid and upper rectum and pushing it downward from above and then closing the peritoneum the operation from the abdominal side presented a beautiful appearance the entire pelvis being completely closed off.

Both these individuals will be subjected to radiation therapy because we think there is something in it. One man has already returned to work. The other man left the hospital within twelve days after his second operation, done ten days after the preliminary colostomy, and it has now been more than two weeks since his dismissal.

L. Wallace Frank (in closing): There are two things not mentioned in my report which might be a *propos*. It must be remembered that in malignancy of the rectum and colon the age of the patient has nothing whatever to do with the diagnosis. Rectal and colonic malignancy occur in young individuals. About a year ago we saw a boy of eighteen who had an infiltrating carcinoma of the colon. He died a short time afterward. We have also seen an infiltrating carcinoma of the colon and sigmoid in a woman of twenty-eight. She had been seen by three or four surgeons in the east, the last one making a diagnosis of inflammatory pelvic disease and urging her to submit to operation. She afterward came to us and operation disclosed carcinoma of the colon and sigmoid apparently beginning deep in the mucosa and extending to the deeper layers finally involving the intestine and everything adjacent to it. The diagnosis of adenocarcinoma was made by the pathologist. In this case resection was impossible on account of involvement of adjacent structures. The patient succumbed shortly afterward. I wanted to mention these cases, because malignancy of the rectum and colon occurs not infrequently in young individuals and we must always be on the lookout for it.

Another feature that I would like to emphasize is that in the general examination of any patient the proctoscope must not be forgotten. I

think many of us have overlooked this in the past. Proctoscopy is a comparatively simple procedure and is indicated in every general examination, particularly where there are any symptoms to cause suspicion of a rectal lesion.

Referring to Dr. Hanes' remark about chronic infections or chronic irritations of the rectum: It is my personal belief that carcinoma is an infection and, whatever the type of organism may be, it does not grow in the presence of streptococcal infection. Whether streptococci have anything to do with chronic irritations of the intestine I do not know, but have seen several cases where patients were operated upon for mammary carcinoma followed by terrific streptococcal infection attended by a tremendous amount of sloughing. Three of these patients have lived eight, nine and ten years respectively, since the original operations without recurrence of the disease. I believe Dr. Hanes will agree with me that the type of infection in the large intestine may be the same as I have mentioned occurring in the breast.

As to the method of operative procedure in malignancy of the large intestine: If it is on the right side, involving the cecum and hepatic flexure, operation may be performed with perfect safety in one stage. If malignancy exists in the transverse colon or splenic flexure and descending colon, operation must be performed in two stages. The first step in colostomy to relieve obstruction, tension and divert the fecal current, the radical removal of the involved tissues being accomplished secondarily. The two-stage operation is the best method of handling these serious cases so far as the immediate mortality and so far as the prospect of permanency of cure may be concerned.

Recurrent Fever Treatment of Chronic Epidemic Encephalitis.—Marcus, Kling and Hoglund inoculated patients suffering from chronic epidemic encephalitis with an emulsion prepared from *Spirochaeta duttoni*. From 1 to 2 cc. of the emulsion was injected in the triceps. This induced a paroxysm of recurrent fever two or three days later, succeeded by three or five further paroxysms. The recurrent fever disappeared spontaneously. Eleven of eighteen patients thus treated presented a grave form of epidemic encephalitis of from three to six years' standing. Thirteen of the patients were under observation from one to three and one-half months after the inoculation. In twelve, there was marked improvement, which was maintained in all, and in some was even progressing. Experiments are being carried on to determine the mechanism of action of recurrent fever on the encephalitic process.

SYMPOSIUM ON EXOPHTHALMIC GOITER

EXOPHTHALMIC GOITER*

ETIOLOGY AND PATHOLOGY.

By E. L. PIRKEY, Louisville.

Etiology: Exophthalmic goiter has been observed with much greater frequency in women than in men, but is not unknown in the latter sex. The disease is most common in females between twenty and forty years of age, although cases have been reported in both extremes of life. Quite young children have been known to have the disease, as have also individuals of both sexes beyond the age of sixty years. Severe cases have been encountered in males between twenty and thirty years old.

The influence of heredity in the development of exophthalmic goiter is undoubted, and several members of the same family may be attacked. Many such instances may be found in the literature. Persons with an extremely sensitive nervous organization, or those possessing so-called "nervous instability," seem especially prone to the disease.

Exophthalmic goiter has occasionally followed the infliction of severe trauma, particularly about the head and neck. It has also been noted following various devitalizing constitutional disorders, especially acute systemic infections. It has been claimed that the adrenal glands are functionally deficient in every case of exophthalmic goiter.

Among the contributing or exciting causative factors may be mentioned: Severe emotional disturbances, worry, fright, prolonged mental or physical strain, etc. The disease may also occur secondarily as a complication during the course of simple goiter; and as a concomitant of certain nasal affections, in pregnancy, etc. The latter varieties, however, are to be distinguished from the primary or essential form. In any event the patients are usually neurotic or hysterical, and there is often noted a family tendency to nervous affections.

The accompanying exophthalmos probably results from the eye being pushed forward due to pressure of dilated vessels, by increased vascularity, by edema, by hyperplasia of fat posterior to the eye, and by contraction of muscular tissue covering the speno-maxillary fissure. A combination of these causative factors may exist in any case.

Pathology: The pathology of exophthalmic goiter seems to be "an over-secretion on the part of the thyroid gland." It is well known that in this disease the thyroid gland may or may not be enlarged. In some of

the most severe cases reported there was no appreciable thyroid enlargement.

Some authorities believe that in all cases there exists paralysis of the vaso-motor nerves supplying the thyroid vessels, with corresponding undue stimulation of the accelerating nervous mechanism.

Thyroid enlargement is due to dilatation of its vessels, serous infiltration, and later hyperplasia or hypertrophy.

EXOPHTHALMIC GOITER*

SYMPTOMS AND DIAGNOSIS.

By A. R. BIZOT, Louisville.

Only a relative accuracy as to pathognomonic signs can be established in a given case of exophthalmic goiter, as the symptomatology is different in different patients, and different in the same patient at different times.

Tachycardia is usually a predominating and permanent sign. Tachycardia and nervousness should always arouse our suspicions of Basedow's disease. It is not readily controlled by cardiac medication, and not altered during sleep (toxicity). A pulse rate ranging from 90 to 200, frequently associated with palpitation and dyspnea, causes the patient to seek medical relief.

The thyroid gland may or may not be enlarged. Rarely there is unilateral involvement, and sometimes one-sided more than the other; it is enlarged in 90 per cent of cases. The size of the gland bears no relation to toxicity. Arterial swirr, hums, or bruits may be heard at times over areas of the gland. (I now have under observation a case where there is no thyroid enlargement but a sub-sternal bruit).

Exophthalmos may or may not exist. It is absent in the early cases in 20 to 40 per cent, but after two years is present in 90 per cent. It is sometimes remittent, and if so it is usually in common with remittance in size of the gland, then there may be temporary amelioration of all symptoms. The eye protrusion may be limited, or to the point of almost dislocation of the eyeball. It may be unilateral. Sometimes—but rarely—a hum can be heard over the eyeball. Ocular tests,—Baston, von Grafe, Kocher, Moehius, Dalrymple, Stellwag, and others, which are due to eye involvement, may be positive or negative.

Tremors and nervousness are, practically speaking, always to a greater or lesser degree present. Tremors can best be established by outstretched arms and fingers sepa-

*Read before the Jefferson County Medical Society.

*Read before the Jefferson County Medical Society.

rated: Nevertheless, all who tremble are not Graves' beginners.

Weight loss is characteristic, gradual or rapid, even to the point of five to eleven pounds per week, despite a good appetite.

Fatigue and pain, though not ever-present symptoms, yet a continual fatigue not relieved by sleep, and fulgurating pains in the extremities aggravated by the recumbent position, are significant.

Epiphenomena: Anorexia, arrhythmia, accessory glands (thyroid), anemia secundus, cardiac hypertrophy, dilatation or myopathia, chorea of tetanic type, diarrhea, dyspnea, diminution of polymorphonuclears and coagulability of the blood, epiphora, emotionalism, hysteria insomnia, leucopenia, pyrexia nephritis, gastro-intestinal and menstrual disorders.

DIAGNOSIS

Typical cases require little thought. Atypical and early cases require the foregoing knowledge and aid of the laboratory. Basal metabolism is unreliable, from minus 10 to plus 10 being normal; it ranges to plus 100 and more, although that alone does not establish the diagnosis. The Basdowian syndrome plus increased basal metabolic rate plus loss of vital capacity and increased hyperglycemia are to date the truest indications upon which to base a positive diagnosis.

The adrenalin, pituitary and thyroid tests are pertinent and confirmatory. Roentgen-ray examination is indispensable from a differential standpoint.

DIFFERENTIAL DIAGNOSIS

It is well to bear in mind that exophthalmic goiter may be associated with other affections, and *vice versa*.

Primary hyperplastic, non-hyperplastic, colloid and cystic goiter; toxemias from other causes, such as lead, arsenic, etc.; neurasthenia, hysteria, paroxysmal tachycardia, tuberculosis, angina pectoris, Addison's disease, diabetes, and many other neurotic and depleting conditions, can readily be differentiated by the history, the cardinal or pathognomic symptoms of the disease in question, and the absence of the Basdowian syndrome, plus the aforesaid laboratory aids.

Aneurisms call into action the roentgen-ray. Malignant thyroid, tumors behind the eyeball are best differentiated post-operative when the near-pathognomic symptoms of Graves' disease have failed.

Permeability of Lung Alveoli to Drugs and Bacteria.—Hirakawa found that the normal alveoli of the lungs of the rabbit are easily permeated by solutions of drugs which show almost the properties of crystalloids and are almost not permeated by bacterial suspensions.

THE SURGICAL TREATMENT OF EXOPHTHALMIC GOITER*

By JOHN R. WATHEN, Louisville.

Before discussing the surgical treatment of exophthalmic goiter, it is well to distinguish this pathological entity from the other diseases of the thyroid gland and clearly define this disease.

Exophthalmic goiter presents a classic syndrome of a constitutional disease due to an abnormal and excessive secretion of the hyperplastic thyroid gland. It is usually accompanied by exophthalmos, tremors, tachycardia, a tendency to gastro-intestinal crises of vomiting and diarrhea, and often attacks of profuse perspiration. Exophthalmic goiter is characterized by an increased basal metabolic rate. It must not be confused with toxic adenoma, a disease which usually occurs later in life and one which is much slower in developing.

The surgical treatment of exophthalmic goiter has of late years undergone many changes and the mortality with the present day methods compares favorably with that of almost any other major operation, due largely to the many improvements not only in technique but also in the pre-operative preparation of the patients, and a better understanding of the after-treatment and avoidance of the distressing and often fatal crisis following thyroidectomy.

The two stage operation, i. e. a polar ligation under local anaesthesia, followed later by a more radical procedure, has in goiter work rendered great assistance in curing the most severe cases just as similar methods of two stage operations in other serious surgical conditions, whose mortality has been greatly reduced, and factors of safety have been understood and appreciated.

Our preparatory treatment in recent years has undergone many rather radical changes and old teachings and ideas have been discarded for better and surer methods.

Absolute rest in bed is not insisted upon, but only partially so and bromides and veronal associated with some form of iodine have proven the best and most reliable remedies. Heart tonics, like digitalis and strophanthus, are of less value than formerly believed to reduce the tachycardia.

Iodine administered for from five to ten day prior to any operative procedure stands today throughout the surgical world as the remedy par-excellence. It is little short of marvelous to see how, after its administration for a few days, these patients become quiet, the pulse improves, the vomiting and diar-

*Read before the Jefferson County Medical Society.

rhea disappear and the basal metabolic rate is often temporally reduced to nearly one-half.

While Lugol's solution of iodine has been rather widely used in this country, the writer much prefers sodium iodide as being more pleasant to take and contains a larger percentage of iodine. It must not be understood that iodine is a permanent curative agent in exophthalmic goiter as it is in the adolescent goiter of the adenomatous type seen in young girls. In fact it has been pointed out by Kocher and others that it is a very dangerous remedy when given over a long period in Graves' disease.

The radical operation of thyroidectomy is seldom indicated as a first procedure in exophthalmic goiter and never indicated in the severe cases.

Ligations under local anaesthesia by novocain are safer and have been so satisfactory when the patient has been given the correct preparation and the proper time in the course of the disease has been selected, that the writer believes in a large percentage of early cases this treatment after several months have passed will be found all that is needed.

Those cases which are not permanently relieved by ligations, stand radical operations well, and by not attempting removal of too much of the thyroid gland at one operation can be greatly benefited or permanently cured.

It is with some hesitation that I approach the technic of operations on the thyroid gland in exophthalmic goiter for the reason that no fixed rule can apply to every case, and the individual patient and gland require special consideration.

We are firmly convinced that less tissue should be left behind in toxic goiters than in simple adenomatous types, but just how much should be removed will always be an individual question.

We should avoid dissection too close to the trachea and undue exposure of nerves in this region, not only the recurrent laryngeals but those supplying the mucous membrane on inside of trachea.

Abundant drainage is very essential in these toxic goiter operations, and by so providing most of the severe crises will be avoided.

With a proper preparation, carefully selected technic, and correct after-treatment, and other means so common in recent years the mortality rate has been reduced by the best operators to about two per cent for exophthalmic goiter cases, but in non-toxic goiters it has been reduced to even one-half of this rate.

Conclusions: The surgical treatment of exophthalmic goiter has progressed to such a stage that the danger of reactions following operations and the avoidance of operative and post-operative complications by careful preliminary treatment and after care, has been reduced to such a minimum that the mortality and the results compare very favorably with any other major surgical procedure, and leave little excuse for delay in advising early and prompt surgical intervention.

RADIATION TREATMENT OF EXOPHTHALMIC GOITER*

By CHARLES D. ENFIELD, Louisville.

In this brief discussion of the radiation treatment of exophthalmic goiter, I shall confine myself very largely to my own experience which, while not extensive, extends over a period of about ten years. I do this for two reasons: in the first place, the cases which I have myself handled are the ones with which I am familiar and about which I am qualified to speak. In the second place, technique in radiation treatment of the thyroid varies probably quite as much as does the surgical handling of the gland. Many forms of radiation approach have been tried, some with very satisfactory results, others with very bad results and it is no more fitting that radiation treatment, as such, should be blamed for the unfortunate results of its misapplication than that surgery, as a whole, should be compelled to carry the burden of the mistakes of the occasional inefficient operator.

Exophthalmic goiter may be handled from the radiation standpoint either with x-rays or with radium. It is probable that the end result from the two forms of treatment are much the same and that the chief advantage of radium, here as elsewhere, is its occasional greater applicability. With regard to the thyroid, this feature expresses itself in the possibility of treating a bed-fast patient with radium without incurring the strain and excitement incident to taking the patient to an x-ray laboratory or to the x-ray department of a hospital. Gamma radiation alone is used for exophthalmic goiter, with the applicator some distance from the skin so that no skin effect whatever occurs.

In most instances we prefer to use x-rays and I shall briefly describe the plan of treatment we follow.

No attempt is made to formulate a routine treatment which shall be suitable for all cases. The rays used are of medium pene-

*Read before the Jefferson County Medical Society.

tration in the neighborhood of one hundred and twenty peak kilovolts with a filtration of four or five mm. of aluminum. The applications are made through three ports of entry, one over each lateral lobe of the thyroid and one over the thymus region, the latter for the reason that most clinicians believe the thymus plays a part in the symptom-complex of exophthalmic goiter. Treatments are administered at intervals of one, two or three weeks, and the time of the individual treatment is varied in accordance with the patient's clinical condition and with the frequency of the treatments. No effect on the skin is produced at any time, either during or after treatment. Histological and clinical investigations have shown that it is possible, by means of radiations of this general character, to produce almost any desired degree of atrophy of the glandular tissue of the thyroid, so that the treatment may logically be expected to control the symptoms of exophthalmic goiter in so far as they are dependent upon an increase in the quantity or activity of the glandular tissue of the thyroid.

Treatment should be controlled by observation of the clinical symptoms as well as by more or less frequent determinations of the basal metabolic rate.

In most instances, rest in some degree is an essential part of the treatment, although, as a matter of fact, very few of the cases on which these opinions are based have the patients been confined to bed during any part of the treatment. With the exception of iodine, we have seen no consistent benefit from any other adjuvants than rest.

I have seen no unfavorable results from x-ray treatment in these conditions. Occasional instances have been reported in which treatment was apparently followed by the liberation of an overwhelming amount of thyroxin with consequent disastrous results to the patient. I believe that these undoubtedly authentic occurrences have been due to too vigorous an initial treatment. I believe that they can be avoided by adapting the treatment to the case of the extremely ill patient, if indeed it seems advisable to treat such a patient at all without a preliminary period of rest and general medical care.

With regard to the selection of cases for radiation treatment: The extremely ill patient with serious cardiac impairment and perhaps impairment of the nervous system as well, is a poor prospect for any sort of active treatment and should certainly receive a very little x-ray unless conditions can be made to improve by other measures. I believe that all other types of exophthalmic goiter patients may be safely treated by radiations with

a fair prospect of partial or complete success.

I should like to protest against the tendency to burden the statistics of radiation treatment with a rather common type of case, which is often referred for "a few x-ray treatments." I allude to the nervous woman, who has neither exophthalmos, tremor, nor eye signs and whose basal rate is very slightly, if at all, increased; but who is irritable, nervous, apprehensive and "hard to get anywhere with," from the therapeutic standpoint. These individuals are mainly psychasthenic and if the thyroid enters into the complex at all, it is not to a sufficient degree to render the prognosis from radiation treatment at all bright. I have treated a number of such cases, always without much hope and usually without any result, except a general dissatisfaction on the part of the patient and the doctor. This is not a shortcoming of radiation therapy, but merely an instance of poor judgment on the part of radiologist.

On the other hand, I believe that the frequency observed type of case with evident hyperthyroidism and with accompanying infected tonsils is peculiarly suitable for radiation treatment, in that this treatment is apt to influence favorably the tonsils as well as the thyroid.

The advantages of radiation treatment have been well outlined by Seymour: First, there are no fatalities; second, there is no resulting scar; third, there is no interference with the patient's occupation; fourth, the treatment is painless and causes very little inconvenience and very little loss of time; fifth, if unsuccessful, an operation may still be performed.

An additional advantage is the relative ease with which patients are persuaded to undergo any non-surgical form of treatment.

As to results, those in the series of about one hundred and fifty cases on which these opinions are based, have been quite satisfactory. Most of the patients have been, so far as I am able to ascertain from time to time, relieved of their symptoms in an apparently permanent way. In some instances it has been necessary to give a second course of treatments after the basal metabolic rate had been brought to normal and we thought we were through. In most of these instances the second treatment has again been followed by relief; this time apparently permanent. In certain instances the disease has proven refractory from the start and little benefit has been observed. Some of the patients, as nearly as I am able to estimate about 10 per cent of the total, have come to operation either through failure of the treatment or through impatience to get results. On the other hand, some of them when treatment was

undertaken, had already been operated upon without permanent benefit. It is only fair to say that most of the cases have been rather mild, although very definite ones and that most of them have been referred by internists who felt that they were not sufficiently severe to make operation imperative. An undoubted drawback to this form of treatment is the fact that it occupies considerable time and that results are not secured for several weeks. This is a disadvantage to a patient who is sufficiently ill to be unable to work and who, for economic reasons, must have prompt results; in other words, the type of individual who can afford to live or to die but not to be ill for an indefinite period.

Some surgeons, perhaps the majority, seem to feel that preliminary radiation renders subsequent operation more difficult and perhaps more hazardous. Others feel that the radiated thyroid can be operated as safely and as successfully as the untreated one. I believe that we have in Louisville prominent exponents of both beliefs. This, perhaps, is a matter of the technique which the individual operator employs.

To summarize: my own feeling is that the patient who has a denite exophthalmic goiter, but who has not suffered irreparable damage to the heart or nervous system, should have a course of radiation therapy before any operative work is done. This proceeding, coupled with the now almost universally endorsed iodine therapy will make operation unnecessary in a certain rather large percentage of cases. It will have the further advantage of bringing patients under treatment earlier through the knowledge that there is an alternative to operation and will, therefore, probably increase the number of satisfactory results from combined treatment without decreasing the number of operative cases. The individual who fails to respond to x-ray, as some do; or who, after a satisfactory initial response becomes worse and fails to respond again, as some do, should, of course, be treated surgically. Likewise, the individual who has had technically good thyroid surgery without satisfactory results should, of course, be given the benefit of radiation treatment, which in some cases will accomplish what surgery has in these instances failed to do. I believe that in this problem as in the cancer problem, the ideal plan would be that these patients should be handled by the internist, the surgeon and the radiologist in joint and frequent consultation without bias and without prejudice.

DISCUSSION

J. Mason Morris: I am sure that we all know more about goiter than we did before we came here tonight. We feel indebted to the essayists for the efforts they have made in bringing before us these papers and the time they have spent in developing them. I think we owe them a vote of thanks.

I have been in the hospital until very recently, so you must not expect anything from me tonight. I had a badly infected hand and general system so I was unable to prepare anything in writing, and have not been able yet to make any notes tonight with reference to this general subject. Knowing that I would be unable to do that on account of my crippled hand, I made a guess as to what the gentlemen might say and dictated a few lines which I thought might correspond.

The universal influence of thyroid extract on the human organism has been known since the study of this subject by scientific men in the last few years. The term exophthalmic goiter is an unfortunate one, because exophthalmos does not in many cases exist; it never exists until late in the disease; neither does goiter exist in many cases until late in the disease. That is why I say the term is unfortunate. The term hyperthyroidism would be more appropriate for this disease than exophthalmic goiter.

For more than ten decades this subject, the study of hyperthyroidism, has been before scientific men, and yet even today there is quite a difference of opinion as to the function of the thyroid gland and as to its importance in the human economy. We do know, however, that these symptoms that we see in this condition are due to the over-production of thyroid secretion and to overflow of this into the human economy.

Exophthalmic goiter has no geographical bounds, it is fairly well distributed over the globe. There seems to be no doubt but environment has something to do with it. As one speaker said tonight, however, probably heredity has more to do with it. It is unquestionably true that the great grandfather, the grandfather and parents and the child may be affected. In many cases this trouble has been traced from the former generation down, therefore there is something in the heredity of it. We know also that this is rarely seen in the negro race. I do not know whether any the members present have seen it in the negro or not, but it is very rare.

In regard to treatment I shall say very little: I will only mention iodine to show briefly what difference of opinion still exists among different authorities with reference to the iodine treatment. If you will read the Mayo Clinics you will find they are giving preparatory treatment in every case they expect to operate on with iodine. The records of their clinics show that they are treating every single case of hyperthyroidism giving preparatory treatment with

iodine, the length of time it is given depending on the condition of the patient. On the other hand those of you who have read Bram, who has written very extensively on the medical treatment of this trouble, have noticed that he claims there is no surgical treatment for it, practically speaking, he states that iodine has no particular place in the treatment, that the large majority of cases are made worse by the use of iodine than are benefited. Therefore it may be seen that the opinion of Bram, who has devoted many years of study to this subject is just opposite the opinion given by the Mayos.

Sajous in his rather extensive work on the treatment of goiter, states that removal of the tonsils in many cases benefits the trouble, that in his experience many cases of exophthalmic goiter have been markedly benefited by removal of the diseased tonsils.

If you will pardon me for giving personal experiences I am going to report two cases of goiter, one toxic case, the other a non-toxic case, whom I have treated. The patients were two sisters aged fifty and fifty-five years, respectively. One had toxic goiter, the other non-toxic goiter. They were treated the same way for a period of five months. I depended rather largely on the iodine treatment for several months. The one with toxic goiter had the benefit of roentgen-ray exposures for a number of months which the other one did not. The woman with non-toxic goiter steadily improved under this one remedy—iodine—and at the end of five or six months the goiter had disappeared, the tumor was gone, and her general health was normal. The toxic case I treated in the same way, keeping the patient in bed the greater part of the time, and gave her the benefit of the roentgen-ray treatment, but her symptoms continuously became worse, her cardiac symptoms and her neurotic condition, loss of weight and all progressively increased. She was getting decidedly worse. The reason I treated her was because she would not allow me to take her to a surgeon. At the end of six months she was willing to undergo operative treatment and the surgeon removed about four-fifths of the gland. From the time of the operation her symptoms began to improve, she began to improve in a general way, the cardiac symptoms were modified, her neurotic conditions were modified, and at the end of six months from the time of the operation this patient is absolutely well. She has gained nearly fifty pounds in weight and is a perfectly normal woman so far as I know. These patients both recovered, one under one line of treatment, the other under another.

J. Paul Keith: There is one point I want to stress and that is the statement made by Dr. Boggess in regard to the prophylaxis of goiter, and of course this goes into the field of the general practitioner as he sees the young girls more during the adolescent period than any of

us. It is my opinion that most goiters are preventable at some time and a plain talk with the mothers of young girls mentioned by Dr. Boggess would probably prevent a great many of the serious goiters that we see later. As to the pathology, I think there is nothing proven. We are all treating symptoms to a certain extent, that is we are treating hyper-thyroidism.

As to the two methods of treatment, surgery and radiation: The surgeon, as I see it, makes a guess as to how much of the thyroid he will remove. This is a question which has to be decided using his best judgment after a careful study of the case. He does his work at one fell swoop and if he has made a mistake in his guess he cannot undo the damage. The roentgenologist can take a little more time and if there is improvement in the basal metabolic rate he may quit a little sooner than the surgeon.

I believe that every patient that is to be operated should be given the benefit of at least three weeks complete rest. If no improvement is shown under rest by that time it should be considered a very dangerous case as the mortality in this type of cases is very high and it is a serious condition to attack with any form of treatment. A great deal of work has been done from the roentgenological side. This question was very carefully studied by a combined committee in the Massachusetts General Hospital five years ago in which a series of 200 cases were investigated to furnish us information as to what the roentgen-ray would do in hyperthyroidism. This committee was composed of two surgeons, one roentgenologist and two medical men. The report made by the surgeons and also by the other members of the committee seemed to bear out the fact that the majority of thyroid cases were greatly benefitted, a certain percentage (possibly 30%) were cured by roentgen-ray treatment. There was a small percentage of them in which no benefit was derived. They had the advantage, however, that surgical treatment could be given later. There is a well formed idea at this time that all cases of goiter should have a thorough understanding with the radiologist before they consider treatment for experience has shown that four months should elapse before a decision that radiation was of no benefit. The surgeon on this committee very readily agreed that with surgical procedures four months would be as soon as a cure could be effected and that they would not expect any more of the roentgenologist. The treatment by radiation would necessarily cover about four months time with the necessary rest between treatments. The surgeon (Dr. Richardson) gives a separate report in which he says that this is not the report of the committee but my own observation. In this article he says that he can see but very little difference in the operation after radiation had been used, that possibly there might be a little more adhesions at

times but not any more than he had always seen after the two stage operation, that is after ligation had been done preliminary to removal. Of course, in the treatment by the roentgen-ray we all see cases just as Dr. Boggess described to you tonight, in which there is very little hope of doing them any good. Still we see them get clinically well. Of course, these serious cases have been made clinically well by surgery also. The mortality from surgery I had understood was a little higher than Dr. Wathen quoted tonight. That is, 2% for the exophthalmic type and we believe he said under ordinary methods with simple goiter the mortality was one-half of 1%. My idea was that the mortality ranged somewhere between 4 and 5%. Of course there is no mortality under the roentgen-ray treatment and you still have surgery left in case no benefit is derived from radiation. I believe this is a subject that should be studied by all of us with as much impartiality as possible between surgeons, medical men and roentgenologists and we ought not to expect that these patients should be turned loose after either surgery or roentgen-ray treatment without being under the careful supervision of a competent medical man for a period of several years.

J. Garland Sherrill: The best thing said here tonight was by Dr. Boggess about the prevention of goiter. The work of Marine has shown us very positively that by having young persons at the pubertal age, particularly girls, given small doses of iodine we can prevent the beginning of thyroid enlargement at that time. Every enlarged thyroid gland is a potential goiter case and by taking them in time we can prevent its development. The simple types of goiter occurring in adolescence can be prevented in the same way. In other words, there is an infective condition which produces its effect upon the thyroid gland. Lane has tried to make us see that this is due to an infection from the colon, but we must admit there are many other sites of focal infection in the body, which, when removed, permit the subsidence of goiter even of the exophthalmic type. We will probably know more about this feature in the future.

This is one subject upon which there should not be any cause for discussion between the roentgenologist, the general practitioner and the surgeon. The treatment includes all of them. The proper treatment of goiter requires more skill than perhaps any one man possesses, therefore it should be conducted by a council of the best men obtainable in medicine, surgery and radiology.

The best treatment I have found consists of rest in bed, the application of cold for the rapid heart action, the roentgen-ray used judiciously, and iodine given cautiously. Iodine should not be given to the toxic goiter patient in large doses; it should be given in small doses and only for a short period of time, because if continued

beyond this period it will overwhelm the thyroid and it will be unable to take care of the poison present. If the active or passive cause of the goiter can be found, that should be removed first, and then apply ice to the precordial area and institute such other measures as may be required. We should not give all the credit to drugs for remission of symptoms, because not infrequently these patients have marked remissions without treatment. The patient should not be operated upon during the height of the symptoms, but surgery should be deferred until there is a remission.

I believe the roentgen-ray, as shown by Dr. Edward Richardson, who read a paper before the Southern Surgical Association, properly and judiciously used will benefit most of these patients. However, that nine per cent of cases of toxic goiter can be cured by medicine, I do not believe. The most important thing in the treatment of goiter is that we should not permit the disease to progress to the point where the cardiac muscle is exhausted or has become diseased before proper measures are applied. Whenever that point is reached the patient is very ill, and even though the goiter or its cause be then removed it takes a long time for the heart to regain its muscular power.

Surgical treatment, in my opinion, is absolutely demanded in all toxic adenomata of the thyroid. It has been my experience that relief cannot be secured in any other way. In exophthalmic goiter surgery is indicated when it is applied in the early stages when operation will be safe, or other methods have been tried and found unavailing. Preliminary treatment is always required before resorting to operation. However, I believe that preliminary polar ligation is a myth, notwithstanding the wonderful work that has been done by Crile and the splendid showing he makes after ligation of the thyroid vessels. We must remember that there are five vessels supplying the thyroid gland. Therefore if one of them be ligated the blood supply is reduced just twenty per cent; with immediate restoration of the circulation by anastomosis; if another vessel be ligated, the same thing happens. It would be necessary to ligate four of these vessels to reduce the blood supply sufficiently to prevent thyrotoxicosis. I believe it is better to perform thyroidectomy. The surgeon can estimate from proper study of the patient how much of the gland should be removed. If too much is removed thyroid gland substance must then be administered. The tendency is to remove too little rather than too much. I do not believe roentgen-ray treatment prior to operation particularly embarrasses the surgeon. Surgery in these cases should be done with the least possible trauma to the thyroid gland, because squeezing the "juice" from the gland into the tissues may cause increase of cardiac symptoms after operations from absorption.

Goiter operations should be done in many cases under local anesthesia. We must bear in mind one thing that was taught by Kocher, of Berne, that if the skin is well cocaineized the patient will have no pain during the operation. The tissues underneath do not have to be anesthetized.

The most important feature is to try and prevent goiter, as mentioned by Dr. Boggess, but if the disease has already developed when the patient comes under observation and operation is decided upon, manipulation of the gland should not be too forcible for the reason I have already stated.

J. Hunter Peak: I am exceedingly thankful to all the men who have read papers and discussed the subject, and particularly to Dr. Boggess and Dr. Simpson, for the manner in which they have discussed it. I only want to say a few words so far as the surgical side is concerned. There are two types only in which the surgeon is interested, viz: cystic goiter and hyperlastic goiter; both are tumors. Cystic goiter may exist for a long time without doing any harm to the patient. Through the process of degeneration a hyperplastic goiter may become cystic. In simple cyst of the gland there may be no symptoms of hyperthyroidism at any time: How many times have we seen very serious hyperthyroidism, and soon afterward without any treatment the patient becomes better but the thyroid tumor remains unchanged in appearance. In the majority of cases, however, the enlargement of the gland is not the same as it was before, and while it was in the first instance hyperplastic it is now cystic and does no harm to the patient, except for the cosmetic effect, or, as I have seen any number of times, the patient applies for surgical relief when the gland is large enough to produce pressure symptoms. It is remarkable sometimes how large the thyroid gland may become without the production of symptoms, the patient remaining in perfect health. On the other hand a small cystic thyroid tumor may produce serious symptoms from pressure on the trachea. I have seen such cases repeatedly. I saw one recently where the woman had to sit "propped up" in bed in order to get her breath. The thyroid gland was not very large but seemed to be adherent showing that there had been considerable inflammatory reaction in times gone by, and sufficient pressure was exerted on the trachea to seriously interfere with respiration. As soon as the gland was excised the patient began to breathe better. The woman was in bed only three days and remained in the hospital one week. These cases are surgical, no medicine or treatment other than surgical is going to do them any good.

In serious cases of hyperthyroidism the thyroid gland may or may not be appreciably enlarged. Sometimes the gland is not very much enlarged, yet the condition of the patient may

be serious. However, I do not care what the condition is, surgery will relieve it if operation is not deferred until the patient is dying, and a great many of them are practically in that condition before the surgeon ever sees them. They pass through every other form of treatment before the surgeon is called upon for relief, and even then a great many of them the surgeon is able to relieve by keeping them in bed and perfectly quiet until the pulse rate remains 90 or 100 for two or three weeks. I do not regard it as safe to operate on these cases where the pulse rate ranges above 100. When the pulse is reduced to 100 or less by rest in bed and other appropriate measures, and remains that way for two or three weeks, operation may be safely undertaken.

The Forchheimer treatment is advisable in connection with rest and dietary regulation. The Forchheimer treatment consists in the administration of hydrobromate of quinine. I believe in adding to this extract of hyoscyamus or some belladonna preparation. This will certainly cause decrease in the nervousness and tachycardia and the patient is made more comfortable. This treatment must be applied while the patient is at rest in bed. I know the patient rapidly improves under this method of management. I also know that radiation will do a great deal of good in these cases toward preparing them for safe surgical intervention. I doubt very much whether radiation ever cured a case entirely. The symptoms oftentimes subside without radiation therapy. Many patients who were seriously depressed and seemingly very ill because of thyroid disease have apparently recovered without any treatment. I also know that all the symptoms of hyperthyroidism can be definitely and permanently relieved by surgical procedures. If the disease is confined to one side, as is often the case, that lobe may be entirely removed. However, if the opposite lobe should later become involved in a hyperplastic growth, under no circumstances or conditions should the entire remaining lobe be excised. The surgeon must leave a certain portion of it, approximately the size of the normal gland, in order that the thyroid function may be continued. In hyperplastic growths when the surgeon leaves an amount about equal in size to the normal thyroid gland, it will be some larger when the patient gets well because the hyperplasia continues in the portion allowed to remain for a while.

One thing I want to mention in regard to the use of radium and the roentgen-ray: I have seen quite a number of cases in which the thyroid gland was very large where radiation was used followed by subsidence of symptoms and diminution in size of the gland. When the gland was later removed surgically, it was dry and not hemorrhagic as we sometimes see when we decide to remove the gland without the use

of radiation. I have not seen any cases where I thought the roentgen-ray produced adhesions of any consequence. There will always be found more or less adhesions if the thyroid enlargement has existed over a long period of time as most of them have before the surgeon sees them.

Adolph O. Pfingst: The subject of exophthalmic goiter approaches so closely the field of the oculist that I would speak of the subject. I agree with Dr. Morris in that the term exophthalmic goiter is often a misnomer as in 20 percent or more of cases of Basedow's disease proptosis is not present. When it is present I believe it comes on earlier in the disease than is generally accepted and it should be looked upon as a valuable aid to the diagnosis. To detect the exophthalmos is not always easy even for men who are experienced in examination of the eyes. Where it is one-sided I agree with the other speakers that the diagnosis may be easy but even here we cannot always associate bulging of the eye with the systemic disease as it may be due to some other condition such, for instance, as pressure behind the eye from a tumor or enlarged ethmoid cells. There may be an extensive one-sided exophthalmos long before any other symptoms become manifest; no tachycardia, no tremor, no enlargement of the thyroid gland; no metabolic changes, and yet the patient may later develop a very large goiter. I remember distinctly a case of this kind seen with Dr. Bizot.

In bilateral exophthalmos we are also apt to make mistakes in diagnosis. Many individuals have so-called "pop-eyes" as family characteristics or as a result of high degree myopia, which may readily be mistaken for a proptosis of goiter.

In addition to the exophthalmos there are frequently other ocular symptoms in Basedow's disease which may be of value in arriving at a diagnosis. One sign frequently noted early in the disease (about two-thirds of the cases) is inability for the upper lid to follow the eye when looking downward. Movement of the upper lid is sluggish and when the eye is turned downward the lid does not follow promptly thus leaving the upper portion of the white of the eye exposed. This is known as the Von Graefe sign and is often noticed early in the disease.

Another ocular sign which may be useful in diagnosis is the long intervals between "batting" the eye. The ordinary individual winks from three to ten times per minute. A person with exophthalmos may not "bat the eye" oftener than once or twice in a minute. When present it is usually an early sign. Watering of the eyes is also present in many of the cases.

In examining the eyes in exophthalmic cases with the ophthalmoscope we frequently note pulsation of the vessels at the optic nerve. This symptom should also be considered in doubtful

cases.

M. Casper: The papers read in this symposium on goiter have furnished us a real scientific and intellectual treat. I am sure everybody has appreciated and enjoyed them. The only fault I can see is that many of the men who would be most benefited are not present. The men we want to know about goiter are the fellows in the country who see these patients before we do and who should be taught to make an early diagnosis. Why is it that the surgeon seldom sees goiter patients until after alarming symptoms have developed? It is simply because the condition has not been recognized early. By the time the patient reaches the surgeon's hands she has tachycardia, tremors, extreme nervousness, exhaustion and all the other characteristic symptoms of toxic goiter. I was recently called to see a case of this kind and the woman died twenty-four hours later because the disease had not been recognized for a long time, she was treated for something else, and yet she had toxic goiter.

If Dr. Pirkey would change his terse statement and add that the cause of goiter is perverted secretion of the thyroid gland, I would agree with him. The secretion is perverted as well as abnormal in quantity.

The early symptoms of goiter and tuberculosis resemble each other very closely. This is an important observation and should be emphasized. If the patient has tachycardia, for example, a careful examination should be made and early tuberculosis excluded before making the diagnosis of toxic goiter. Rapid action is an early symptom in nearly all cases of pulmonary tuberculosis.

I think Dr. Simpson has exactly the right idea about the iodine treatment of goiter. In a discussion of this subject before the Society for the Prevention of Goiter last year it was the unanimous opinion of those present that iodine is never curative in exophthalmic goiter. It does harm and is absolutely contraindicated in toxic adenomatous goiter. The only time the administration of iodine is indicated is as a preliminary to surgical intervention and is then only useful for a short time. It should be given in proper dosage for a short time only, and the patient should be in the hospital where she is under perfect control as iodine is very harmful in some of these cases. Certain individuals have an idiosyncrasy for iodine and if not under absolute control it may do far more harm than good. Iodine does not cure goiter in any stage, and in either toxic or the exophthalmic type it should only be used in connection with other treatment, preparatory for operation.

There is a recent article in one of the medical journals reporting sixteen hundred cases of goiter in a Boston Hospital with a mortality of one-half of one per cent. These cases were all treated surgically after proper preliminary

measures had been instituted. I believe someone remarked that the mortality from goiter surgery ranged between four and five per cent; that is not the case.

The roentgen-ray is no doubt useful in the treatment of goiter. Anyone who has used the roentgen-ray knows that it is a very powerful agent, but we have not yet learned how to prevent injury to other important structures; we cannot prevent exposure of the jugular vein, the thymus gland, the pneumogastric nerve and other important tissues. It is also an unfortunate fact that we cannot regulate the dosage. Another point about the roentgen-ray is that the mortality in goiter is just as great from this method of treatment as from surgery. Roentgen-ray treatment is not a harmless procedure by any means.

The medical treatment of goiter should be applied mostly to early cases; it has no place in those severe cases of goiter such as the surgeon has to contend with; it should concern itself with early recognition and relief of these cases before they become frankly surgical. I know it is the custom of physician to prescribe a great many drugs in the treatment of goiter, but it is exceedingly questionable whether any good is accomplished. Works on materia medica mention very few drugs for the treatment of goiter, all of doubtful, uncertain value.

We must not confuse toxic adenoma of the thyroid and exophthalmic goiter, the latter being the subject we are presuming to discuss tonight. I must take issue with Dr. Sherrill about preliminary polar ligation. I am certain that ligation has saved a great many patients who were most seriously ill with exophthalmic goiter. While ligation may not permanently lessen the blood supply to the thyroid, much benefit is derived by the procedure because the ligature also includes the sympathetic nerves that follow the superior thyroid arteries. This is shown by the fact that the metabolic rate is reduced by ligating one superior thyroid artery; then if necessary after delay of a few days the second artery may be ligated. This usually results in reduction of the metabolic rate and the pulse and renders the patient a comparatively safe surgical risk for removal of such portion of the thyroid as the surgeon may consider proper. One thing we must guard against and that is trying to do too much at one time in goiter surgery. Patients often encourage us to attempt more than they can withstand in order to avoid second and repeated operations. Some surgeons simply make a skin incision close to the tumor and do nothing more at that sitting. In extreme cases this may be justified. Under the judicious use of local anesthesia and the multiple stage operation the majority of cases of goiter can be satisfactorily handled by surgical methods. I believe preliminary ligation is a most important step in the surgical treatment of

goiter of the exophthalmic type.

Walter I. Hume: I would like to add my testimony in favor of preliminary ligation of the superior thyroid arteries in the treatment of exophthalmic goiter. I think this should be recognized as an important feature in all goiter surgery. My experience has been that in every case it has been of benefit. Along this line a recent case in which ligation was performed may be worth mentioning: The patient was in a desperate condition when admitted to the hospital; after a few weeks of rest and proper medication ligation was practiced; she gained twenty-eight pounds, and the pulse rate receded from 160 to 100 and the metabolic rate from plus 90 to plus 40. General improvement was so marked that radical operation was, for a time, refused. We removed the thyroid under local anesthesia with only the slightest reaction and the patient made a satisfactory recovery. I think ligation, the roentgen-ray or iodine medication should be used until the pulse and metabolic rates are sufficiently lowered to make radical surgery safe.

Ligation, Lugol's solution and x-ray are important adjuncts in the treatment of goiter, but are adjuncts only.

A. R. Bizot (closing): The importance of making a positive diagnosis in the early stages of exophthalmic goiter cannot be too strongly emphasized. It is worthy of note that goiters sometimes "cure themselves," that is the patient recovers because the goiter has simply "burned itself out." This is spoken of in the literature as a "burned out goiter." The patient may live for many years and then die of some other disease. There is another type of goiter that pursues a very rapid or malignant course from the beginning. I do not mean that the patient has cancer of the thyroid, but the goiter is acute from the start and progresses rapidly to a fatal termination. In such cases it makes no difference what form of treatment is used,—medical, surgical or the roentgen-ray,—the patient dies just the same.

One of the speakers said in performing thyroidectomy it was advisable to leave a portion of the gland approximately the size of the normal thyroid. The thyroid gland is not always enlarged in exophthalmic goiter, occasionally it is atrophic and smaller than normal. In such a case it would be impossible to leave a portion about the size of the normal gland.

Another surgeon said he saw recently a goiter patient who died twenty-four hours afterward. That was evidently an acute case such as I have mentioned. Sometimes exophthalmic goiter develops very quickly and progresses rapidly the patient dying within ten days. There is tremendous loss of weight in these cases, occasionally as much as ten or eleven pounds a week. The thyroid gland may or may not be enlarged; the patient declines rapidly and dies

from profound toxemia.

There are definite cycles or waves in exophthalmic goiter. When we speak of placing the patient at rest in bed for three or four weeks before operation, we do not mean this literally, because it may require a much longer time. The patient should be kept in bed six months if necessary under rest and proper medication, and should never be operated upon during the height of the cycle or wave; surgery should be deferred until the patient goes into a declining wave; she can then be operated upon with the greatest degree of safety.

Charles D. Enfield (closing): One point that has been made should be further emphasized. I do not believe the entire picture in exophthalmic goiter is caused by increased secretion of thyroxin. If it were it would be easily cured by surgery, and it would be rather easy I think to control by use of the roentgen-ray. I think there is some other factor that has a bearing on it.

Dr. Casper's x-ray experience must have been unfortunate. One can hardly imagine that any roentgenologist would be so incomplete as to include the pituitary in radiation of the thyroid. The dosage of x-rays is at present very accurately controlled and very well understood. Further, the method of divided dosage enables one to watch the effect on the patient and to stop or interrupt treatment when it seems that the desired effect has been achieved. In this respect the method is more accurate than surgery. As regards mortality from x-ray treatment of exophthalmic goiter, there should be none unless, indeed, the apparatus happens to fall on the patient.

John R. Wathen (closing): In the discussion we have wandered far afield. We came here with the intention of talking about exophthalmic goiter, and we have discussed every phase of the goiter question. Exophthalmic goiter is a clear-cut and definite disease, and there should be no confusion in regard to the diagnosis. It is usually accompanied by exophthalmos and enlargement of the thyroid gland. It is rapid in its development, begins usually about the age of twenty-six and reaches its climax at thirty-two. The symptoms are characteristic and there should be no difficulty in the diagnosis. Exophthalmic goiter is entirely different from the so-called toxic adenoma which occurs usually in women about the menopause. The adenomata do not develop rapidly, they may begin in childhood and reach their climax at about the age of forty-five. We must make a clear distinction between these two diseases.

When should we administer iodine in goiter? Iodine should be given the pregnant woman who has a goiter history in her family or if goiter is prevalent in the region where she is living; iodine should also be given such a woman during her lactation; her child should be given

iodine when eight or ten years old, and another course of iodine treatment when the pubescent period arrives. The adolescent type of goiter is easily cured by the administration of iodine over long periods of time.

It has been shown and emphasized that iodine is a very dangerous remedy in exophthalmic goiter, yet it is the most valuable remedy we have when administered during preparation of the patient for operation. It should not be continued longer than a week or ten days. Large doses of iodine given for that length of time prior to operation will prevent the distressing crises which sometimes follow. That is the only time when iodine is indicated in exophthalmic goiter. Iodine is also useful in toxic adenoma as a preliminary to operative work. In neither exophthalmic goiter nor toxic adenoma should iodine be given in small doses over long periods of time; massive doses should be given just before the operation.

We know today that the cause of goiter is lack of iodine in the water. People who eat plenty of fish and oysters and live along the seacoast never have goiter.

Intravenous Injections of Cerebrospinal Fluid for Prevention of By-Effects of Spinal Anesthesia.—Daniel considers that the by-effects of spinal anesthesia are of anaphylactic nature, and are due to disturbance of the vagosympathetic equilibrium. A small quantity of cerebrospinal fluid introduced into the blood stream may cause a slight shock, entailing desensitization of the organism for a certain time. The shock from the anesthetic may thus be averted. With the patient in the sitting position, from 5 to 10 or more cubic centimeters of cerebrospinal fluid is withdrawn. The anesthetic is then injected; the patient is made to lie down and told to breathe deeply. The fluid removed is injected subcutaneously or into the vein at the bend of the elbow. Five or six minutes later the operation may start. In thirty-four cases, he used the subcutaneous; in sixty-six, the intravenous route. The immediate results were better with the latter. The pulse rate increased after two or three minutes, going up to 110 pulsations; at the end of fifteen minutes it was normal. Respiration was lightly accelerated for six minutes following the injection. The color of the face remained good throughout the operation. Nausea and vomiting were absent. The late results were also excellent. It appears that by stimulating the sympathetic, the injection of cerebrospinal fluid increases the arterial pressure and, secondarily, the cerebrospinal pressure, because of the parallelism existing between the two.

WOMAN'S AUXILIARY NOTES

NOTES FROM JEFFERSON COUNTY AUXILIARY

The first business meeting of the Woman's Auxiliary, Jefferson County Medical Society was held Saturday, February 5, at the Louisville Free Public Library, the President, Mrs. S. W. Bates, presiding.

The Constitution and By-Laws, as found on page 583 of the Woman's Auxiliary Number, Kentucky Medical Journal (the December 1926 issue) was adopted with a few amendments.

The President read an invitation to the members of the Jefferson County Auxiliary to visit the New Waverly Hill Sanitorium at Pleasure Ridge Park and have tea some afternoon as guests of Mrs. Oscar O. Miller.

The following committee was appointed to arrange for this party and to plan the program and meeting place for the Spring Meeting: Mrs. Frank T. Fort, Chairman; Mrs. Irvin Abell, Mrs. Edward Palmer, Mrs. John K. Freeman, Miss Grace V. Stroud.

An invitation was read from the Louisville Obstetrical Society requesting the Jefferson County Woman's Auxiliary to sponsor an open meeting for women, to hear an address by Dr. George Clark Mosher of Kansas City, the eminent obstetrician, a guest of the Louisville Obstetrical Society and the Jefferson County Medical Society. The invitation was unanimously accepted.

The meeting was held Monday, February 7, at Library Hall. Dr. Mosher, ably and comprehensively discussed "The Need of Adequate Care for Mothers" before a large audience of interested women members of the Auxiliary and their friends, many of whom serve on health committees of the Several Womens Clubs and Parent-Teacher Associations, and a number of Public Health Nurses.

HELEN G. BLACKERBY, Secretary.
MRS. P. E. BLACKERBY.

OLDHAM COUNTY ORGANIZES

The Woman's Auxiliary, Oldham County Medical Society, was organized January 21, 1927 at the home of Dr. J. N. Sams and Mrs. Sams at Crestwood.

The meeting followed a delicious and bountiful dinner beautifully served for the doctors of Oldham County and their wives. Guests of honor were Dr. A. T. McCormack and Mrs. McCormack of Louisville. Covers were laid for sixteen. Much merriment prolonged the dinner hour. Shortly after eight o'clock, the physicians gathered in the living room for a medical meet-

ing while the women held their session in an upper room.

After an explanation of the purposes and aims of the Womans Auxiliary organization, given by Mrs. A. T. McCormack, the following officers were elected for the ensuing year:

President—Mrs. J. N. Sams, Crestwood.

First Vice President—Mrs. H. B. Blaydes, LaGrange.

Second Vice President—Mrs. T. G. Connell, LaGrange.

Secretary-Treasurer—Mrs. S. J. Smock, LaGrange.

Parliamentarian—Mrs. C. L. Hancock, LaGrange.

Dr. H. B. Blaydes and Mrs. Blaydes will be hosts for the next meeting to be held February 21, in LaGrange.

THE WOMAN'S AUXILIARY, AMERICAN MEDICAL ASSOCIATION

Plan now to accompany your doctor to the big National Convention, the Annual Meeting of the American Medical Association, to be held May 16, in Washington, D. C. Arrangements are now being made for elaborate entertainment for the members of the Woman's Auxiliary. This annual meeting of the women of the profession from all over the country is delightfully interesting and instructive.

PLEASE NOTE.

Will county secretaries please send news notices, dates of meeting and other important information for publication to the State Secretary? All items should be in the Secretary's hands before the first day of each month.

SPECIAL NOTICE

In this issue of the Journal we are publishing an article entitled "The Physicians Duty In Relation to Oral Hygiene" which is Dr. Bass' contribution to the Womans Auxiliary Number of the Kentucky Medical Journal. Due to pressure of work, coincident with the annual meeting in Atlanta of the Southern Medical Association, of which Dr. Bass is the retiring President, it was impossible to complete the preparation of this paper in time for the December issue.

The members of the Womans Auxiliary, Kentucky Medical Association will read with appreciation and gratitude this interesting and instructive article which Dr. Bass so graciously prepared for us.

THE PHYSICIAN'S DUTY IN RELATION TO ORAL HYGIENE.

By C. C. BASS, M. D. New Orleans, La.

The purpose of this paper is to emphasize the fact that the health service which a physician is supposed to render to his patients would be greatly increased in value by giving more attention to oral hygiene than is ordinarily done.

The ordinary examination by a physician frequently includes, so far as the mouth is concerned, only a look at the tongue and possibly a look into the throat. If he pays any attention to the teeth, this consists largely of inspection for decayed or absent teeth. If the patient is given any advice at all it is usually, to go to a dentist.

The increased attention given to focal infection and the importance attached to this as a source of disease in other parts of the body, as well as constitutional diseases, has led physicians during recent years to send many more of their patients to the dentist or the x-ray laboratory for x-ray examination. Foci of infection are nearly always found, for the reason that foci of infection and alveolodental pyorrhea are present in the mouth in practically all adults who have not already lost all of their teeth. If a competent examination is made, pyorrhea pockets are found around one or more teeth in the mouth of almost any adult, notwithstanding the fact that their existence may not have been suspected or recognized previously.

Pyorrhea pockets, loss of teeth from pyorrhea, and caries constitute the advanced stage of disease, most of which could and should have been prevented by the application of oral hygiene or cleanliness. There is no reasonable doubt but that the loss of teeth affects the general health of individuals, and in fact, the average longevity to a considerable extent. A man or woman who must go through a considerable part of life with absent or very deficient teeth with which to masticate food, is certainly handicapped. Not only is the health impaired but the pleasure and satisfaction of life is also reduced.

The loss of teeth is abnormal and produces many disease processes with which we are now becoming familiar. The two chief causes of loss of teeth are caries and pyorrhea. These are both preventable. Since the loss of teeth materially affects the health and longevity of man, it is the duty of a physician who claims to give health service to his patients, not only to give advice as to the treatment or best remedy for a defective condition which already exists, but to also give advice

as how to prevent the occurrence of such diseases or conditions.

Caries in teeth occurs as the result of the chemical substances chiefly, if not entirely, acids produced by bacterial decomposition of food substances. All carbohydrate food substances may be fermented by one kind of bacteria or another. This fermentative decomposition produces acids, and these acids attack the teeth. Where food particles lodge and remain for hours, sometimes a day or two, they decompose and produce acids which attack the teeth at such points. Once a cavity is started, a more favorable lodging place for food is formed and the process is more or less continuous. Acids are not produced in the mouth and teeth in the absence of carbohydrate material. It is very apparent, therefore, that if no food is retained in the mouth for long periods of time, several hours or more, that the teeth would not be attacked and damaged in this way. If one could and would remove every trace of food from the mouth and teeth after each meal, he would never have caries.

The other cause of loss of teeth is what is known as Riggs' disease or alveolodental pyorrhea. It is caused by the invasion of the periodontal tissue under the edge of the gum by bacteria and also particularly protozoa. Usually the gum is first damaged by some hard food particle or otherwise, and then food particles from time to time are packed into the little pocket previously made. This has the effect of a foreign body in tissue, around and in which bacteria multiply rapidly. The products of bacterial growth with the frequent addition of foreign material, continue to irritate and damage the tissue so that the lesions extend deeper and deeper, finally surrounding and perhaps undermining the teeth. The bony structure in which the tooth is set gradually gives way to this long suppurative process. After several years the supporting structure of the tooth is finally destroyed and the tooth is lost. Sometimes the disease lasts for at least twenty or thirty years. One thing that promotes the suppurative process is masses of bacteria and fungi that grow and extend downward from the surface of the tooth at the edge of the gums. In most cases of pyorrhea there will be found a ring or film of growth of bacteria just at the edge of the pyorrhea pocket and extending down into it. If this is not allowed to form the disease either gets well or at least does not progress so rapidly. Cleansing of the teeth frequently to prevent collections of so-called tartar on the teeth is sufficient to prevent pyorrhea, to a large extent at least.

Although it may be important to treat diseases and conditions of the teeth after they have been established, the prevention is far

more important, and since these diseases affect the general health of the individual, it is the duty of the physician who has the care of the health of the individual to advise him with reference to preservation of his teeth. All that is required to save the teeth for a ripe old age is to begin in childhood to thoroughly remove food from them at least once a day, preferably following each meal. If the cleansing is done only once a day, it should by all means, be done at night before retiring because a great deal more damage is done during the long quiet period of sleep than at any other time. Brushing the teeth in the proper way is important, but perhaps even more importance is thoroughly rinsing the mouth after brushing, for unless one thoroughly rinses the mouth, no amount of brushing will remove food particles and particularly food in solution.

I believe that it is the duty of the health adviser, the physician, to learn these facts himself and then to advise his patients accordingly. It should not be left entirely to the dentist who too often is consulted only after disease is already far advanced. If people only knew how to do this and would carry out the simple advice of thoroughly cleansing the teeth and mouth one or more times each day, the loss of teeth would be very much minimized, and as a matter of fact the longevity of such people would be greatly increased. Promotion of longevity of man is one of the principle duties of the physician.

Babinski's Sign in Lumbosacral Funiculitis; Its Peripheral Origin.—In one of the two cases described, the patient had had an acute attack of lumbosacral funiculitis of sensory and motor type, of spondylitic origin. The muscles supplied by the crural and by both sciatic nerves on one side were atrophic. A typical Babinski sign was present. Clinically, the function of the flexors as well as of the extensors of the toes appeared unimpaired, but the electric reactions revealed less excitability in the flexors than in the extensors. On improvements in the atrophied muscles, extension alternated with flexion on attempts to elicit the reflex, and it is probable that with complete recovery the normal flexor reflex will become constant. In the second case, in a man recovering from sciatica, the function of the two antagonistic muscle groups was gravely impaired, more so, however, in the flexors than in the extensors, which fact was responsible for the positive Babinski reflex.

Vaccina and Nervous System.—Walthard was unable to produce encephalitis in rabbits by corneal inoculation with various strains of the virus of vaccinia. Even neuroparine showed no predilection for the brain.

BOOK REVIEWS

MODERN CLINICAL SYPHILOLOGY. By John H. Stokes, M. D. Professor of Dermatology and Syphilology in the School of Medicine, University of Pennsylvania; Professor in the Graduate School of Medicine, University of Pennsylvania. Octavo of 1444 pages with 885 illustrations and text figures and more than 200 detailed case histories. Philadelphia and London: W. B. Saunders Company, 1926. Cloth \$12.00 net.

This new book is not alone for the syphilologist but particularly for the practitioner. It not only tells what to do, but how to do it; and while it is not a laboratory manual, it deals fully with the application of laboratory methods. With this work any physician can conduct the modern care of syphilitic patients from the introduction of the needle to the estimation of prognosis. He can meet treatment emergencies, interpret and correct difficulties and know what to expect of a consultant if he should call one.

The basis of the work is observations made over a period of ten years as teacher and practitioner, and practically every known aspect of syphilis is treated. The illustrations have been taken especially to illustrate problems in the clinical behavior of syphilis. The procedures are illustrated step-by-step down to the very point of the needle under magnification. Tabular summaries, resumes, aphoristic thumbnail sketches and case discussions provide a specially accessible, condensed, and forceful presentation of the fundamentals of each type.

THE TREATMENT OF FRACTURES: With Notes Upon A Few Common Dislocations. By Charles L. Scudder, M. D., Consulting Surgeon to the Mass. General Hospital, formerly Assistant Professor of Surgery at the Harvard Medical School. Tenth Edition, Revised. Octavo volume of 1240 pages, with 2027 illustrations. Philadelphia and London: W. B. Saunders Company, 1926. Polished Buckram, \$12.00 net.

The new (10th) edition of Scudder's "Treatment of Fractures" contains 65 per cent. more material than the former edition. There is an increase of 491 pages and 764 illustrations, the new edition now containing 1240 pages and 2027 illustrations, a number in colors. The section on open or operative treatment covers 303 pages and contains 398 illustrations. Other important changes are in the chapters on fractures of the maxilla and mandible, of the vertebrae, pelvis, clavicle and scapula, the elbow, peripheral nerve injuries, fractures of the forearm, femur, leg. There are 730 x-ray photographs.

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COUNTY SOCIETY REPORTS

Bourbon: The Bourbon County Medical Society held its regular meeting on Thursday evening, December 23, 1926 in the private dining room of the Windsor Hotel at 6:30 P. M.

Drs. J. A. Budd, and J. C. Minnish of Frankfort, Ky., were present as invited guests of the Society.

The Society was served with a delightful dinner appropriate for the holiday season.

The minutes of the preceding meetings were read and adopted.

The following officers were elected for 1927:

President M. J. Stern
First Vice-President H. M. Boxley
Second Vice-President H. B. Anderson
Secretary & Treasurer C. G. Daugherty
Delegate M. J. Stern
Alternate W. C. Ussery
Censor, 3 yr. term J. C. Hart
Censor, 2 yr. term Wm. Kenney
Censor, 2 yr. term H. M. Boxley

G. A. Budd, Frankfort, read a paper on "Prenatal Protection of Infants."

L. C. Minnish, Frankfort, read a paper on "Practical Points in Obstetrics."

J. A. Orr opened the discussion and was followed by Drs. H. M. Boxley, J. T. Vansant, C. G. Daugherty, J. A. Gilkey and in closing, by Drs. G. A. Budd and L. C. Minnish.

C. G. DAUGHERTY, Secretary.

Harrison: The Harrison County Medical Society held the annual meeting and dinner at Hotel Harrison, December 6, 1926 with members and visitors present. Drs. Wood, Henry, Midden, Wyles, Binford. N. W. Moore, Martin, Rees, McIlvain, W. B. Moore, Carr, R. J. Estill of Lexington, C. W. Shaw of Burlington, H. C. Clark and C. H. Kendall of Falmouth.

Officers for 1927

J. E. Wells President
W. N. Carr Vice-President
W. B. Moore Secy.-Treas.
Censors—J. Martin, 1927; E. S. McIlvain, 1929.
Delegate W. B. Moore
Alternate J. P. Wyles
W. B. MOORE, Secretary.

Carter: The regular meeting of Carter County Medical Society was held December 9, 1926. Dr. W. A. Henton, presiding, resolved that we continue our annual meeting at Carter Caves some time in August. Also request that the state continue the free clinics to be held at Grayson, especially trachoma, tonsils and tuberculosis.

G. B. O'ROARK, Secretary.



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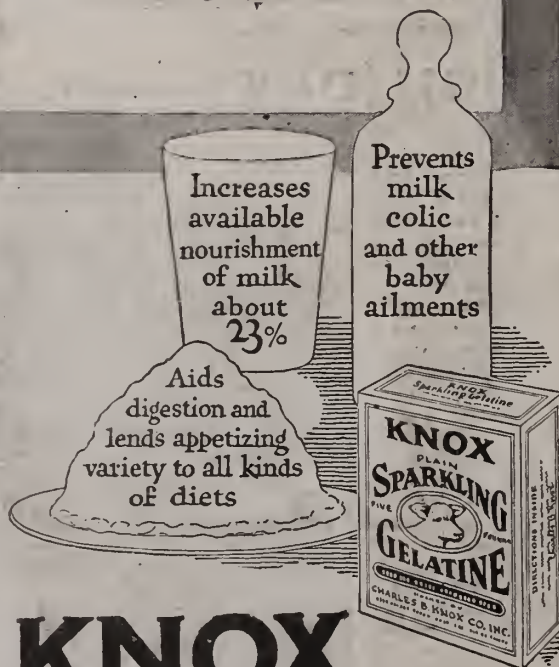
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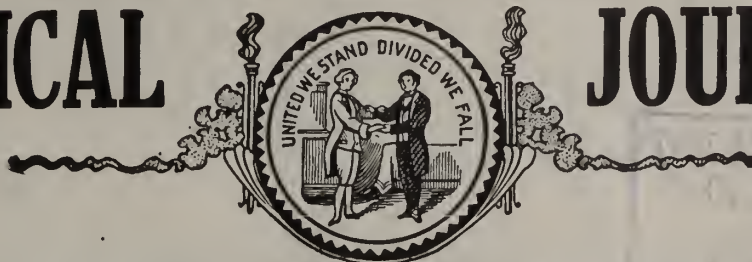


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(Continued On Page Five)

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EDITORIAL

A NEW MEDICAL SOCIETY.

The Cumberland Valley Medical Society was organized at a meeting held in Corbin recently. It will be composed of the members of the county societies in Harlan, Bell, Knox, Laurel and Whitley Counties.

Dr. W. M. Martin, Harlan, the councilor for the eleventh district was elected president and George T. Corum, Corbin, was made secretary.

The county societies in this district are large and active and this will give them an opportunity for an interchange of their work which should prove valuable to all of them.

A CONTRIBUTION TO MEDICAL HISTORY.

The Woman's Auxiliary of the Kentucky State Medical Association have very wisely, we think, determined to devote a large part of their time to a study of the medical history of Kentucky. The Journal feels very fortunate in being able to present at this time a photograph of Dr. William Henry Martin who practiced medicine at Claysville in Harrison County.

Dr. Martin was born in 1830, died in 1923. He took his first course of lectures at Transylvania, Lexington, in 1849-50, completing his medical education in Jefferson Medical College in Philadelphia, receiving his degree March 8, 1851.

In September, 1851 he was called to see a boy, Ennie C. Kelley, twelve years of age, who in "skinning a cat" on a peach tree limb received a severe abdominal injury. Dr. Martin was assisted in the operation by Dr. Bob Rainey, the patient was held by James Jolly and some other men. An incision was made almost from the ensiform to the pubes. Volvulus was discovered and a small incision was made in the gut and a gallon of fluid removed before it could be reduced. The incision in the bowel was closed with silk and the peritoneum, muscle and skin with one continuous silk suture. The boy lived to be eighty-one years of age.

A brother-in-law and a niece of the boy who was operated upon are living in Indiana and they both say that an anesthetic was giv-



DR. Wm. HENRY MARTIN

en, it was probably chloroform. Three old men in the neighborhood still living say that the boy came out of the influence of the anesthetic during the operation, raised his head up and looked at his guts, and said, "Now you've done it."

Dr. Josephus Martin at present one of the leading physicians of Cynthiana is a son and worthy successor of his distinguished father.

THE SALE OF ULTRAVIOLET GENERATORS DIRECTLY TO THE PUBLIC.

The Council on Physical Therapy of the American Medical Association, on the basis of the present available evidence, is convinced that the sale of generators of ultraviolet energy to the public for self-treatment is without justification. The Council bases its condemnation of the sale of such apparatus for this purpose on the following grounds:

1. The uninformed public could not take the proper precautions in administering treatments and, as a result, severe general

burns or grave injury to the eyes might ensue.

2. Those not familiar with the possibilities of such apparatus would be led to place unwarranted confidence in the therapeutic value of such treatment by the claims that might be made in the literature advertising such generators, and to undertake to treat serious conditions not amenable to such treatment.

3. The unrestricted possession of such therapeutic means would tend to deprive people of expert diagnosis by encouraging them to make self-diagnoses.

4. Such practice would encourage the sale of useless and fraudulent lamps which would be advertised as generators of ultraviolet rays, since the public would have no means at its disposal to determine the quality or quantity of the radiant energy emitted by such lamps.

For the foregoing reasons, the Council on Physical Therapy considers as detrimental to public welfare the sale or the advertising for sale, directly to the public, of a generator of ultraviolet energy. Under rule 11 of its Official Rules, the Council will declare inadmissible for inclusion in its list of accepted devices for physical therapy apparatus manufactured by a firm whose policy is in this matter detrimental to public welfare.

THE RURAL MEDICAL PROBLEM

In the present revival of discussion on the rural scarcity of physicians, it is profitable to get all the information possible, as to local conditions. Opinions from rural physicians may also be instructive, so I venture to offer the following.

Dr. Pusey's elaborate and thorough work along this line is very enlightening, and his conclusions from quite an array of statistics are convincing along certain lines, but a solution of the problem is the result to be desired.

I have been a rural physician for forty years, living in a town of less than two thousand inhabitants. Local conditions in my county of about fourteen thousand population is only one item in many thousand, but gives some idea of changing conditions. Before the present trend of physicians to concentrate in urban communities this county usually had twelve to fourteen physicians, and no irregulars. These were about equally divided between the town and country in location. Now we have two regular white physicians in country locations, and seven in town. We also have in town two regular colored physicians, one chiropractor, and one combined homeopath, osteopath, and eye specialist. The medical work is being cared for very well since our roads have been improved,

and the advent of automobiles. Our regular physicians are all good doctors, and also the best fellows in the world. The situation here is rather unusual in having so many regular physicians in a small town. We have to be content with small incomes, but the town has practically all the advantages of the city, plus a bountiful supply of natural gas furnished at low cost, without city disadvantages, hence it is an attractive place to live.

I hope I may be pardoned for giving some expressions to my opinions in regard to proposed changes in education of physicians. I am sure no man worthy to be given the legal right to practice medicine, whether undergraduate or a graduate of lower order, would consent to have his field for work chosen for him, or be under the restricting direction of a health officer, or any other overlord. I doubt very much if the medical ranks would be augmented to any great extent if second class diplomas were offered to young men who desire to enter the profession. Many of us are probably second grade physicians, but we all would object to wearing the label.

The old adage that "water always seeks its level" applies to doctors the same as to other professions, trades, or callings. The man with meager education, but with energy and ability, will rise above his surroundings, while the man with a full medical school and hospital training, but lacking the other qualities, will not be able to overcome his natural handicap. Confusion would come from turning men loose to practice medicine with different grade diplomas from the same school.

With the present improvement in roads, and lessened incidence of acute diseases, there is no scarcity of physicians, but there is a lack of equality in distribution. There is not likely to be any dearth of physicians for many years to come, if ever, but the inequality of distribution will probably increase, unless there is improvement in living conditions, and further improvement in roads in rural communities. There is also an urban trend of the population which may overcome, to some extent, the problem of disparity of medical men in rural districts. Even in rural sections the people visit the doctor more, and have him visit them much less, than in former times.

It is my belief that the educational standards should be fixed as at present, or possibly not quite so technical, but the same for all students in the same school. The graduates will all then be equipped for acceptable medical work in any field they may choose. I believe incompetent medical practice is probably not any better than none at all.

The irregulars may prey on the people more as the regular physician becomes less

available, but, except in the few cases in which delay in proper medical treatment is a serious factor, they (the irregulars) do very little damage except financially. Their work in most instances, is equivalent to no treatment.

I believe that the matter of distribution will be cared for, as time passes, as well under present educational conditions, as if we had a mixed profession of first and second grade graduates—legally speaking.

J. L. Atkinson, Campbellsville.

OFFICIAL ANNOUNCEMENTS

ENDOWMENT FUND FOR UNIVERSITY OF LOUISVILLE.

The University of Louisville, which since its inception as the first municipal university in America has been a pioneer in medical education, this month will round out its 90th year of service. Today the School of Medicine of the University is the only medical school in the Commonwealth of Kentucky and the oldest existing school of medicine west of the Alleghenies. In the course of its 90 years the University has graduated thousands of doctors who have gone into all parts of the South and the West and have in many instances become the pioneers in medicine in their localities. Today more than 20,000 persons call the University of Louisville their Alma Mater. Sixty per cent of the physicians and sixty-two per cent of the dentists of Kentucky are graduates of the University.

The story of the development of the University of Louisville from a group of medical students, who gathered for their first lecture in the upper room of the city work-house, to an institution embracing five schools and with an enrollment of 1,500 and a faculty of 227, is truly an epic. The foundations of the University were laid in the third decade of the last century when three members of the disbanded medical department of Transylvania University, seeing in Louisville an ideal site for a great medical school, came to the city from Lexington. These men inspired some of the leading citizens of the city to take steps towards the creation of a medical institute, and on April 3, 1837 the City Council of Louisville formally authorized the project, granted land for the college and appropriated \$50,000 for the first building and the equipment. Thus it was that the University of Louisville was born.

Nine years later the Kentucky Legislature granted to the new University a charter giving the President and Trustees authority "to establish all the departments of a University, and for the promotion of every branch of science, literature and the liberal arts." For

sixty years the University consisted of the school of medicine and a school of law, which is, with one exception, the oldest law school in the South. In 1907 the organization of a college of liberal arts and sciences was made possible by the public spirit and generosity of a group of Louisville citizens. The following year the five schools of medicine in Louisville became one and thus the School of Medicine of the University, as now constituted, was organized. In this coalition there was besides the medical department of the University the following schools: the Kentucky School of Medicine, founded in 1850; the Louisville Medical College, founded in 1869; the Hospital College of Medicine, founded in 1873, and the medical department of Kentucky College (now Transylvania University) which was founded in 1898. This coalition assured for the school the continuance of its Class A rating and gave to the present school the combined native strength of the several schools represented in the merger.

The next great forward step was the annexation of a school of dentistry. In 1918 the equipment of the Louisville College of Dentistry, which had been associated with Centre College of Danville, Kentucky, was purchased, and the college reorganized as the school of Dentistry of the University.

The latest school of the University was created in 1924 when through a bequest of \$250,000 from Mrs. F. M. Sackett and William S. Speed the creation of the James Breckenridge Speed Foundation was established, as a memorial to the father of the donors, and the Speed Scientific School was organized. The school, dedicated to the advancement of the sciences related to engineering, was opened in 1925.

Thus in a span of something less than a century there has grown up in Louisville a well-rounded University, one of the half dozen outstanding municipal universities of America, whose material and spiritual value to the city and the commonwealth is becoming increasingly manifest, and whose place in the history of higher education in America is unique.

In order that the work of this school may be developed to meet the needs of the city and the state that it serves, and that the other colleges of the University may be accordingly strengthened, the Board of Trustees of the University of Louisville on the eve of the University's ninetieth birthday has announced that an endowment fund of two million dollars is to be created. The alumni of the University throughout Kentucky and the nation and the other friends of the institution will be called on during the month of April

to make their contribution to this fund. All subscriptions will be payable over a five year period, ending May 31, 1932.

The income from this endowment fund, which will amount to at least \$100,000 a year, will be used exclusively for improvement of the teaching program of the University. With this income the trustees of the University will be able to build up a larger full-time faculty, create much-needed new departments and strengthen existing ones, establish evening courses for the young people of Louisville who are employed during the day, and build up the University library, which is inadequate for the present needs.

The creation of this general endowment fund is the second step towards a Greater University of Louisville. In the fall of 1925 the people of Louisville in voting a bond issue of one million dollars for the physical needs of the University authorized the first step in this general direction. With this money the new campus of the University, located at Third and Shipp Streets, was freed from indebtedness and funds for the erection of the first of a group of new buildings, an administration hall, were provided. Already work is well along on the administration building, a stately Georgian edifice, which is to cost \$266,000.00.

It is appropriate that in this public campaign for funds the alumni of the medical school should take the leading part, for it is the medical graduates that make up the greater portion of the University alumni. In order that each alumnus of Louisville may be reached and given an opportunity to make some contribution to the endowment program, the nation has been sub-divided into twenty divisions, and a chairman for each division has been named. In this way the alumni of the University of Louisville will be linked up in a united effort to insure the unhampered continuance of their University.

A further step in the organization of the University alumni is the division of the State of Kentucky into 12 districts, over which a chairman has been appointed. Dr. G. A. Hendon of Louisville, Class of 1894, has been named divisional chairman for Kentucky, and is at work organizing the 2,800 alumni throughout the state.

The district chairmen for Kentucky who have been appointed to date are Dr. G. L. Dyer, '13, Beuchel; Dr. B. K. Menefee, '93, Covington; Dr. E. E. Linville, '07, Mount Olivet; Dr. Omer F. Hume, '17, Richmond; Dr. S. C. Smith, '12, Ashland; Dr. A. M. Gross, '05, Hazard; Dr. William R. Parks, '22, Harlan; Dr. Carl Norfleet, '05, Somerset; Dr. Fidella Edwards, '04, Glasgow; Dr. Elmo McClure, '06, Elizabethtown; Dr. Elbert W. Jackson, '12, Paducah. During the

last few weeks conferences have been held in each district and local chairmen named for each town in which there is a group of alumni.

To head the twenty national divisions of the alumni some of the most distinguished of the University alumni have been recruited. These national divisional chairmen and the territory over which they will be responsible in the solicitation of the alumni follow: For Kentucky—George A. Hendon, '94, of Louisville; for Indiana, Dr. A. M. Mitchell, '13, of Terre Haute; for W. Va., and Virginia, Dr. John W. Duff, '10, of Charleston, W. Va.; for Illinois, Michigan and Wisconsin, Dr. P. J. H. Farrell '92, of Chicago; for Missouri and Kansas, Dr. Walter F. Holbrook, '15 of Kansas City; for Oklahoma, Dr. Lea A. Riely, '98, Oklahoma City; for Texas, Dr. Harry B. Jablow, '11, Dallas; for Tennessee, Dr. Robert F. Patterson, '10, of Knoxville; for Florida, Georgia and Alabama, Dr. R. W. Waldrop, '96, Bessemer, Ala.; for Mississippi and Louisiana, Dr. Ernest L. Posey, '15, Jackson, Miss.; for Arkansas, Dr. James E. Jones, '10, of Little Rock; for Ohio, Dr. Earl A. Baber, '09, of Cincinnati; for the Eastern States, Honorable John J. Kindred, '89, of Washington, D. C.; for North Carolina, Dr. Henry Otis Lineberger, '14, of Raleigh; for South Carolina, Dr. James Moss Beeler, 17, Spartanburg; for California, Dr. Earl Mendum Tarr, '15, of Los Angeles; for Washington, Morris U. Lively, '25, of Seattle, and for New Mexico, Dr. Robert L. Bradley, '90, of Roswell.

From its beginning the medical school of the University has been progressive and forward looking. Founded as it was by former members of the medical faculty of Transylvania University, the first medical school west of the Alleghenies, it lays just claim to being a pioneer in medical education in the West. As the educational standards of the medical world slowly but steadily rose, and the requirements for admission and for graduation became more rigid, so the standards of the University medical school rose. From the very first, stress was laid on clinical teaching, and class-room lectures were supplemented by clinics in the hospital ward and operating room. Throughout its history the school has sought to train men for general practice, to make of its students competent, resourceful, and courageous practitioners of medicine. Almost from the first the school has maintained teaching relations with the hospitals of Louisville, with the old Marine Hospital, with St. Mary and Elizabeth Hospital and with the city institutions, especially the Louisville City Hospital.

Today, while the methods of teaching have improved in the passing of the years and the

present equipment of the school would amaze the pioneer teachers and students, the fundamental policies of the school have in no degree changed. Emphasis is still laid on the fundamentals of medicine. Ventures in post-graduate instruction and excursions into the vast and unexplored fields of medicine have been left to the richly endowed schools of the East and the North. The statement of purpose of instruction in the current catalogue might have appeared in the early catalogues of the school, so little changed are the educational ideals of the institution. "The general purpose of instruction in this School is to educate men to become general practitioners of high standing, well trained in the fundamental medical sciences, and in the intelligent application of those sciences to the prevention, diagnosis, and treatment of disease."

The School of Medicine of the University of Louisville is exceptionally well-equipped to carry out this program of instruction. Its two buildings are amply equipped for the academic class-room and laboratory work, while the Louisville City Hospital, the teaching hospital of the School, located nearby affords a wealth of clinical material for the advanced classes in medicine and surgery. The entire professional service at the hospital, which has an average daily population of 325 is furnished by the school of medicine. It is safe to say that no medical school in America has fuller opportunities for clinical instruction than is afforded by the City Hospital to the University of Louisville School of Medicine.

The popularity of the school is indicated by the large number of applications for admission to the freshman class. Each year there are received many more applications than there are vacancies to fill. Last fall three hundred sought to register in the first year course. Of this number only 84 could be admitted. In every instance residents of Kentucky are given precedence in the matter of admission.

Every year an increasing number of the graduates of the school enter hospitals for at least a year of hospital service before engaging in practice. While a period of hospital service is not required in Kentucky, as it is in a number of states, the graduates of Louisville are encouraged to obtain this experience. Last year approximately ninety per cent of the graduating class were given hospital appointments after competition with graduates of the larger and better-known medical schools of the East. Graduates are now serving in hospitals from Providence, R. I. to San Francisco, and from Cleveland to New Orleans. Men have gone from the school to the Mayo Foundation at Rochester,

Minn., the Lakeside Hospital at Cleveland, the Henry Ford Hospital at Detroit, the Peter Brent Brigham Hospital at Boston, the Rhode Island Hospital at Providence, Vanderbilt University Hospital, Cincinnati General Hospital, Indianapolis City Hospital, Charity Hospital of New Orleans, New York Post-Graduate Hospital, the University of Kansas Hospital, Kansas City General Hospital and many other of the outstanding hospitals of the country.

In order that the high character of teaching may be maintained and the various departments of the medical school may be developed, the teaching staff must be increased and the load of detail work that now rests on the shoulders of both the academic and clinical faculties must be lightened. Administrators of the school look forward to the establishment of additional courses in public health and preventative medicine, and to the establishment of a regular post-graduate clinic, which will offer to men in the profession the opportunity to do graduate work during three or four weeks of the year.

To make these improvements in the curriculum and teaching staff additional endowment is absolutely essential. The sources of income that accrue to the University are definitely limited to three: present endowment of \$265,000, of which \$250,000 is for the support of the Speed Scientific School; tuition fees, which represent only about 36 per cent of the operating costs of the University, and the city tax levy, which is limited by law to five cents per \$100. The present income of the University is insufficient for the present needs of the institution. Therefore, to expect improvement in teaching conditions without additional endowment is out of the question. Because it is necessary to create additional operating capital to provide revenue for the upkeep and upbuilding of the University, the Board of Trustees are asking the men and women of Louisville and the alumni of the University throughout the state and nation to create this general endowment fund of two million dollars. The income from this fund which will amount to at least \$100,000 a year, will be a perpetual boon to the University, and insure the progressive development of the several schools that go to make up America's oldest municipal university. Until this endowment fund is provided, the future of the University and its school will be uncertain, and its place amid American colleges insecure.

ORIGINAL ARTICLES

LOCAL ANESTHESIA: INDICATIONS, LIMITATIONS.*

By A. J. BRYSON, Ashland.

The subject which we shall discuss briefly with you is one that has been receiving a fair share of attention from Medical Association Meetings, and has likewise been getting a reasonable amount of publicity by way of the Medical Press. These, we take it, are fair indications concerning its use and importance.

The administration of drugs for general anaesthesia has reached a high degree of perfection and safety, and this, in our opinion, is one very good reason why the use of local or regional anaesthesia has not kept step, and will continue to be a reason that will mitigate against the use of local. We contend, however, and at least hope to impress upon you some of the very good and important reasons for its use and important points relating to its advantages, to such an extent that you may be more than willing to give the plan and method careful consideration. The idea of performing operative procedures upon patients who are fully conscious is in no sense new, rather, the direct opposite is quite true. The more or less recent widespread uses to which local anesthesia has been put, dates back to the discovery of cocaine, along about the year 1884. From this date on, commendable efforts on the part of the medical profession have been made to do major operations by the use of local anesthetization, but due to the fact that cocaine is so highly toxic, its use in sufficient quantity was thereby precluded. Since the introduction of cocaine derivatives, or their synthetic preparations, local anaesthesia is gaining new impetus, and has received considerable attention, particularly from foreign clinics, and has come into moderate use in this country, especially within the past ten years. Many of the foreign clinics are performing a rather high percentage of their surgery under local, some to the extent of eighty or ninety percent. The same high percentage does not obtain only at some very few clinics in this country, even up to the present. If the time comes when the pharmacologists can offer us a product whose toxicity will be absolutely negligible and still retain the anaesthetic property that we are now able to get from procaine, we firmly believe local anesthesia will become the anesthetic of choice in practically one hundred percent of cases. We may add here, however, that local is now safe, provided, of course,

that reasonable good judgment is used in its administration, in fact, we have had no untoward symptom in our clinic, which covers a total of about fifteen hundred (1500) administrations. Care and judgment, however, must be exercised in its administration, particularly to avoid administering large quantities directly into the blood stream.

The administration of general anaesthetics, while not exactly standardized, their administration does at least harmonize, and the same condition exists, or can be applied to major operative surgery. While these procedures are not fully standardized, and individual operators can not be standardized, the methods and efforts are very much in harmony. Granting these facts to be true, we very rightly conclude that morbidity and mortality statistics will remain fairly stationary. The point that we desire to make and contend for, is that we may possibly reduce these statistics to a lower level by taking into the fold of anesthesia, local. There are classes and types of surgery which we fully believe can be done with greater safety, and at the same time lessen slightly the hospitalization period than if they had been done under general anesthesia. Some of the whys and wherefores pertaining to this, we hope to explain more fully under indications and limitations. We are purposely omitting detailed description of the technical administration in local anaesthesia, since this, of itself, would constitute more than an ordinary essay, and does not quite come under the scope of my discussion in this paper.

INDICATIONS.

Certain classes of patients, from the pathological standpoint, should receive serious consideration as to the anaesthetic when it becomes necessary to submit themselves to surgical procedures. Tuberculous patients would necessarily come under this class, and, with the rarest exception, we are convinced that no anaesthetic will meet the needs of the patient suffering from tuberculosis quite so well as local. The tubercular patient is below par, and, therefore, should receive very careful consideration from every angle bearing on his immediate operative procedure, as well as the future outlook on the tuberculous focus. Not infrequently, tuberculous patients who have submitted to operative procedures have rapidly gone on to an unfavorable result, while quite frequently just the opposite is noted. It is not so much the effect of the general anaesthetic on the pulmonary condition that we have in mind when speaking about local, but rather, remembering the emancipated, sub-standard state of this class of patients, and our point is that following surgery under local, the patient is in much bet-

*Read before the Kentucky State Medical Association, Frankfort, September 20, 21, 22, 23, 1926.

ter condition and will more rapidly make a satisfactory convalescence.

Another class of patients that lend themselves very well to major surgery under local, is the cardiovascular renal type of patient. This particular class of patients, as is well known, are comparatively poor risks, both as regards anaesthesia and surgery. We may then say that this class, too, is a sub-standard type and will, like the tuberculous patient, be more safely operated under local, and will likewise make a more rapid recovery.

There is yet one other patient in which the choice of anaesthesia is more important than those formerly mentioned, and this particular patient may or may not be tuberculous, or may or may not be suffering from some other type of organic disease. We refer particularly to the patient who is highly septic, in which the surgical condition may have been neglected, emaciated body fluids depleted, and so forth. This kind of patient is necessarily an extremely poor risk for major surgery and every precaution possible, and every pre-operative care should be given this type of patient. In most instances, however, this type is demanding immediate interference, therefore, we especially commend local anaesthesia, since very little, if any, added damage will result as a result of surgical interference, from the anaesthetic standpoint. Furthermore, this patient can immediately, in most instances, be given fluids and nourishment following the operative procedure, thereby materially increasing his chances for a complete recovery.

Certain body regions, as well as particular pathological conditions, can be dealt with more easily than others under regional anaesthesia. We do believe, however, there will be few body regions, and but few conditions that may not be dealt effectively with under the proper administration of regional anaesthesia. We mention some conditions, such as gastro-intestinal surgery, intestinal obstruction from whatever cause, neglected appendiceal cases, patients that have become practically moribund from whatever cause. As other indications for local, we will mention its serious consideration in any case or condition in which the choice of anaesthesia becomes an issue. Accident and industrial surgery can usually be taken care of very nicely under local anaesthesia, since its administration will neither add to nor produce shock.

Local anaesthesia is easy of administration and very effective in dealing with conditions of the lower bowel, for cervical cauterization, prostatectomy, and perineal lacerations, caudal block being used for operative work in this particular field. Extremely satisfactory operations upon the head, neck, and chest

can be carried out effectively under local, as can operations upon all of the extremities. We, however, are not doing all of our surgery under local anaesthesia, in fact, we may say here that we make use of ether, ethylene, colonic, and local, in our surgical activities. Operations on the upper abdomen, especially cholecystectomy, from the operative standpoint, can be dealt with easier under colonic anaesthesia than any other kind, due to the complete relaxation, and almost complete absence of the usual respiratory excursion. We are employing local anaesthesia in about sixty percent of our cases, a very, very small percent under colonic anaesthesia, and the remaining percent about evenly divided between ethylene and ether. Having had no personal experience with spinal anaesthesia, we can not speak for or against its use.

LIMITATIONS.

Local anaesthesia is not unlike other useful remedies or procedures, since it has its disadvantages and limitations. The greater one's observation, study and application, the less firm becomes the boundary as applied to local anaesthesia in its connection with operative surgery. The drugs used in the production of local anaesthesia are poisonous, and this should ever be remembered in their application and, beyond a reasonable quantity, should not be used.

For some several years we have made use of one particular brand of procaine (neocaine) on account of its convenience and high state of purity. Mental attitude toward the very idea of submitting one's self to operative procedures while yet awake, will preclude the possibility of doing surgery for certain individuals. This percent, however, is negligible. Our experience has shown us that the so-called nervous type of patient usually makes an exceedingly suitable party on whom to operate under local anaesthesia.

There are certain types of bodily diseases that can not be blocked or anaesthetized so well as others. Among these would be inflammatory areas that are massive in type, making it extremely difficult, or impossible, to secure an effective block proximal to the condition. Some pelvic conditions, ones that we may very well term the "city hospital" type pelvis, where there are extensive adhesions, enormous pus tubes, inflammatory masses, and so on, in which the operative effort would require considerable pulling and hauling, would be somewhat difficult to do under regional anaesthesia, but given a case in which the pelvis is clean, hysterectomy can be very readily performed, and just here, we shall briefly describe the technique employed in such a case. First, a caudal block is used, then the abdomen is blocked in layers or oth-

erwise, peritoneum being anaesthetized after the abdomen is opened, usually. Then, after abdomen is opened, blocking may be done along the Fallopian tubes, round and broad ligaments, bladder reflected peritoneum, after which the operative procedure should be carried out with minimum of trauma and tugging. By this plan, a subtotal or complete hysterectomy may be very well completed. Lack of sufficient time in which to anesthetize patients by operators doing many operations per day, is often offered as an excuse for not employing local, and we admit that it does take a reasonable amount of added time. This, however, in our opinion, is not a valid reason for its non-use, since the patient's welfare should certainly receive first consideration. We also admit, as previously mentioned, that most cases can be operated under most any kind of general anesthesia with more or less safety, and we have particularly stressed the value of local anaesthesia in substandard risks and desperately ill patients. If local is good, or better, than general for these classes of patients, it likewise may be more than safely used in those whose physical check up is good.

We have heretofore omitted to say that the preparation of the patient for local anaesthesia is very necessary, and should be as thorough in the pre-operative check up as if they were being operated under general anaesthesia. A small dose of morphine, and often, a very small dose of hyoscin or scopolamin is added, this given about one hour before the operative time. The anaesthetist takes care of the patient as much so as if general anaesthesia was being administered. The patient should be made extremely comfortable on the operating table. The beginning of the operative procedure should be extremely gentle, being quite sure not to cause pain at this time. Often, later on in our operative efforts, the patient will submit to considerable trauma without complaint of pain.

We conclude by suggesting to every man in this association doing surgery, that he give some careful consideration to the subject of local anaesthesia in his surgical activities.

DISCUSSION

John W. Price, Louisville: This subject of Dr. Bryson's is one which is of constant interest to all of us and it is one to which I think we do not give enough attention in our routine work. I have operated on a number of cases under general anesthesia in which subsequent results have shown that it would have been better if I had used a local anesthetic.

There is one class of case that the Doctor did not mention, or if he did I could not hear him, and that is the acute respiratory diseases. You will find, if it is your misfortune to have to do

an emergency operation on a patient suffering with an acute infection of the tonsils or the larynx or the bronchi, that you are very fortunate in having a local anesthetic to use and a technic which is thoroughly satisfactory. It is only during the past winter that I was called to see a young patient twenty-one or twenty-two years old who had an acute infection of the tonsils and pharynx, what had been diagnosed for several days as the flu, with temperature 101 and 102, and during the course of this illness she developed an acute pain in the right iliac fossa and her medical attendants made a diagnosis of acute appendicitis before I was called into the case.

My being called in simply confirmed the diagnosis, and an examination of the patient showed that to subject that patient to a general anesthetic would be practically the same as ordering a death warrant for her, so the operation was done under a local, she was returned to bed in a very few minutes, the patient never had any vomiting or nausea after the operation, she had no postoperative morphia, she had none of those ordinary discomforts following an operation which we usually see after a general anesthetic such as ether.

I wish to congratulate Dr. Bryson on the excellence of his paper and the care in which it has been prepared and the detail that he has used in calling to our attention that multitude of cases which are benefited by local anesthesia.

A. D. Willmoth, Louisville: There is one class of cases that I didn't hear the essayist mention that I think local anesthesia is particularly indicated in, that is the so-called status lymphaticus case.

The boy or girl who presents themselves to you for surgical work whose height is exceeded by length from tip to tip, whose glandular system is out of balance, has pluriglandular imbalance, is a dangerous case to give a general anesthetic, his ductless glandular system is entirely out of balance and he is the one who dies from diving into water and who dies quickly from a few inhalations of anesthesia of almost any kind.

We should look for these cases. These are a particular type of people to be operated upon with the local anesthetic; it is practically safe, while the giving of a general anesthetic is exceedingly dangerous. If the essayist mentioned that, I failed to hear it. They are the class which should all be operated on under local and never submitted to general if it is possible to avoid it.

A. J. Bryson (in closing): I heartily concur in all the statements made by the men who have taken part in the discussion, and particularly so as to that class of patients referred to by Dr. Price. There were many things left unsaid in my somewhat brief paper. One statement in

there, however, covers many of those things left unsaid, where I made the remark that in any patient where the anesthetic becomes an issue, serious consideration should be given the local anesthesia.

LOCAL ANESTHESIA IN THYROID-ECTOMY.*

By JOHN R. WATHEN, Louisville.

Operations for Goiter were among the earliest surgical procedures wherein general anaesthesia was replaced by local anaesthesia.

Kocher of Switzerland did all his operations under this method and his influence in European clinics has been responsible for its continued use abroad.

It is strange that in America we have only recently appreciated its advantages, for it is a method which lends itself especially to surgery of the thyroid gland.

It greatly reduces the risk of injury to the recurrent laryngeal nerves, avoids the liability to bronchitis and post-operative pneumonia and almost entirely does away with vomiting after operation, which is very dangerous, annoying, and predisposes to hemorrhage.

There is a special advantage in local anaesthesia in cases of toxic goiters for the reason that the heart in these cases most often has been damaged to an extent to make any general anaesthetic a greater risk and in some of the worse cases general anaesthesia is absolutely contraindicated.

Local anaesthesia has been employed by three methods, namely: (a) terminal infiltration, (b) field block and (c) nerve block.

Nerve block regional anaesthesia has become the most popular and is the most satisfactory.

Cervical plexus block is accomplished by two methods: First, injection of the nerve trunks at the level of the point of exit of the cutaneous nerves, a point corresponding to the middle of the posterior border of the sterno mastoid muscle, or, second, injection of the points of junction of the 2nd, 3rd and 4th cervical roots at the level of their exit from the intervertebral foramina in front of the transverse processes; i. e., the method of paravertebral anaesthesia. This is accomplished by either the posterior or the lateral direct routes.

Then next injection at the upper poles, along the region of the superior thyroid arteries, as the sensitive nerves of the gland enter mainly through the upper poles and the injection of this area blocks the sensation of the posterior surface of the thyroid lobes.

And lastly injection along the line of the collar incision of Kocher which should encircle the anterior lower part of the neck just above the sternum.

Novocain without any adrenalin in three-fourths of one per cent solution is the anaesthetic of choice.

We have entirely discarded adrenalin in goiter surgery as it has no special advantages and may be dangerous in the toxic goiter cases.

The dermal wheals are first made with a very fine pointed needle which produces little or no pain, and later a large needle, without the syringe, is introduced to its full depth and a few seconds allowed to elapse to see whether any blood flows from the needle and then if it has not punctured a blood vessel, the syringe is then attached and the novocain solution slowly injected.

This latter method, we adopted only after several rather alarming experiences, where we had injected the solution directly into a vein or an artery the consequences of which are very serious and may be fatal and since its adoption we have had no more trouble from this source.

The preliminary medication is of equal or as much importance as the novocain injections.

We give the evening before the operation 12 to 15 grains of Veronal in the form of the Elixir of Veronal, as it is very readily absorbed, can be given by mouth or by rectum and has no accumulative action.

The next morning early, we give Elixir of Veronal one half the amount given the night before; i. e., about 6 to 10 grains.

One hour before operation an injection of morphine gr. 1-6 and Scopolamine gr. 1-200, is given.

After the thyroid lobes have been exposed and we are ready to elevate and apply forceps to the vessels, we give an injection of Morphine grs. one-fourth which usually is all that is needed for the completion of the operation.

We have employed this method for the last year in a large number of operations, and in no single instance have we had to supplement the local anaesthesia with nitrous oxide or any other general anaesthetic.

This method has allowed us to handle the bad risk, damaged heart cases, which we formerly refused for operation.

It has not only increased the operability, but has decreased the mortality.

The operative technique employed when local anaesthesia is used, should differ from that with general anaesthesia.

Too much elevation and traction should be avoided as these cause pain and by very gen-

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tle manipulations much can be accomplished, which would be impossible if the same methods formerly used in general anaesthesia were used.

The technique we have now adopted and which we will illustrate with lantern slides, has these above mentioned advantages. It is also rapid, safe, and allows us to leave behind on both sides of the trachea a small portion of each lobe containing the parathyroids and covering the recurrent laryngeal nerves, as we prefer to do a bilateral operation in the great majority of goiters. Although we advise this technique as especially suited to local anaesthesia, we do not wish to exalt this into a rigid rule, but merely desire to indicate a method which in our opinion greatly facilitates the performance of the operation under local anaesthesia and pays due regard to the anatomy and physiology of the thyroid and parathyroids.

CONCLUSIONS.

Local anaesthesia is especially suited to operations on the thyroid gland and possesses advantages over general anaesthesia in the prevention of injury to the recurrent laryngeal nerves, avoids the liability to bronchitis and post-operative pneumonia, and almost entirely does away with the vomiting after operation, which is dangerous, annoying and predisposes to hemorrhage.

It also places less burden on a damaged heart and kidneys, and by so doing increases the number of bad risk cases accepted for operation, as well as reduces the mortality. The only disadvantage it possesses is that it requires a special training and experience, and is not well suited to those of limited experience in this class of surgery.

DISCUSSIONS.

A. J. Bryson, Ashland: I am thoroughly convinced that practically all goiters can be done under local anaesthesia and I am likewise quite thoroughly convinced that practically all should be done under local anaesthesia. Dr. Wathen has described very clearly the various techniques used in goiter removal. As one is not quite sure as to the location of blood vessels, there will be no danger if the aspiration test is done from time to time, and this will apply more particularly when injections are made laterally. Most goiter operations can be completed under the ordinary field block. If a sensitive area is encountered, the injection of a little added anaesthesia here and there will permit the completion of the goiter removal.

J. Hunter Peak, Louisville: A strange thing to me in this country is why we have not used local anaesthesia more than we have in goiter work, when Kocher himself, who is the father of goiter surgery, used it almost entirely, whether cases were toxic or not.

We have been in such a habit of doing our

goiter work under general anaesthesia that it is hard for us to break away from it yet. I think there are a great many cases where we can still use a general anesthetic, particularly those cases of a cystic goiter, goiters of that character, where the patient is not profoundly poisoned.

In all toxic cases where the toxicity is profound, we now have a means of relieving them as Kocher did and has for a number of years by the means that Dr. Wathen has so beautifully demonstrated to us today.

As to the anesthetic used, there is no question at all but that the novocain is possibly the safest one we can use. I do not see any necessity of using the adrenalin at any time. An injection of normal saline or even water will almost do the same thing.

In the use of this drug the nerve block is possibly quicker and you can proceed without any subsequent anaesthesia, except, as the Doctor suggested, as the patient would suffer from pain.

It has been my experience that under local anaesthesia there is no great hurry about your work being done. Under general anaesthesia you have to and should work rapidly. Under local anaesthesia you do not have to work fast. Your patient will talk to you if you permit him to, and certainly he is going to do it if you hurt him.

My method has been to start with the skin where you expect to do your first incision and take your time. When you pass through the skin and superficial structures, the fascia, even down to the gland and the capsule surrounding it, inject the tissues as you come to them.

I believe in all operative work, and more particularly that of goiter, we should handle our patient just exactly as though he were awake and not only conscious of what we are doing, but as if he were not even having a local anesthetic administered.

A great deal of traumatism can be done to the neck and nerves where you use a great many hemostats, as I have seen done, possibly twenty-five or thirty or more being used in an effort to be quick and rapid in the enucleation of the gland. The very presence of the hemostats will cause traumatism.

The best means is to use a small hemostate as you can to pick up the artery consistent with the size of the artery. Pick it up and ligate it as soon as you get to it. Go ahead with your enucleation until you are through, and if at any time the patient complains of pain, you can easily stop it by simply dropping a few more drops upon that part you are operating upon and not being in too big a hurry. Just give it a little time.

In that way you not only control all your hemorrhage as you get to it, you do not produce any traumatism to cause pain then or subse-

quently, and you can do your work much better and not shock your patient at all.

I am particularly interested in the local anesthetic in those cases where there is no hope of the patient at all on account of the cardiac and renal condition, and where we use the local anesthetic we can operate on the cases as the Doctor suggested, who were considered inoperable.

PARESIS, SOME RECENT ASPECTS.*

By H. B. SCOTT, Louisville.

Paresis is an organic disease of the brain of an inflammatory and degenerative nature, manifesting itself by certain physical symptoms and progressive mental deterioration, and producing various mental symptoms. It is essentially a cortical disease, but its symptomatology is frequently modified by spinal complications. The psychic symptoms in addition to the characteristic progressive dementia, present many phases; neurasthenic, hysterical, hypochondriac, melancholic, manic, circular and paranoid.

The disease is best studied perhaps in three stages: the prodromal or incipient, the established mental disorder (which may be exalted, depressed or hallucinatory), and the terminal period of dementia. I shall base my paper more particularly on the prodromal or pre-parietic period, because of the great importance to both the patient and the family as well as the public in general, in being able to detect the disease in its very incipency, thus being able to avoid many unpleasant and disastrous happenings that often occur during this stage of the disease.

Paresis is one of the most insidious forms of insanity as regards its gradual and almost unnoticeable onset. Very often this early stage presents symptoms which lead to its being mistaken for neurasthenia. The earliest symptoms may be neurasthenic in character or even a combination of hysteria with neurasthenia. Insomnia, tremor, irritability of temper, hypochondriacal depression, dull headache, ophthalmic migraine, pains in various parts of the body, general malaise, loss of appetite and digestive disorders; these are manifestations which may readily be misinterpreted as purely of functional nature. It is only where other symptoms in addition to these, are presented that a suspicion of a more serious disease may be entertained or the diagnosis actually established.

There are so many manifestations in the prodromal period that it is not strange that it should often go unrecognized during its early stage, however, there is no disease in

which a failure to make an early correct diagnosis results so disastrously. It is during this early period that those unfortunate occurrences are so frequent which might have been prevented if the true condition had been recognized.

Paresis is manifested in its incipency by symptoms of defective judgment and intelligence, memory defects, and moral obtuseness.

We frequently see the most pitiful pictures—a previously respected citizen, father of a family, occupying a good social position, change and become, at the height of his success, a failure and debauch, while his friends see nothing decidedly wrong mentally, although they take notice of this decided change. If we can get at and recognize the early symptoms in these cases, many tragedies would be prevented daily. A change in general conduct, lasting weeks or months, is usually followed by an acute maniacal excitement—the delirium of an acute toxic psychosis—and even the slowly developing depression of the melancholia or the gradual change of character of the paranoid, is usually not appreciated before any serious harm is done. The diagnosis of Paresis does not rest solely upon the mental symptoms. Paresis is a gross organic syphilitic disease of the brain and its diagnosis must rest largely upon an appreciation of the physical signs which these changes bring about, particularly in the field of motor disturbance. Delusion of grandeur and great wealth, power and strength are in no wise a necessary part of the symptom complex and while the so-called classified type of Paresis does present such delusions, still reasons have been advanced for believing that this type is becoming relatively less frequent. The most important physical symptoms of the prodromal period are the oculo-motor and the tendon reflex disturbances. In the oculo-motor phenomena the pupillary abnormalities are most important. The loss of the light reflex with retention of the reaction to accommodation—the Argyll-Robertson pupil, is one of the most valuable diagnostic signs of beginning Paresis, in the absence of Tabes, as it frequently occurs very early. This symptom is present in about forty-five per cent of all cases. A sluggish reaction to light, probably the beginning stage of the Argyll-Robertson pupil, is found in about twenty-eight per cent, while a normal light reflex is present in about twenty-six per cent. It is generally conceded, however, that the Argyll-Robertson pupil is much more common in the tabetic type of Paresis, which is about eighty-four per cent.

In examining for these conditions, care should be taken that movements of accomo-

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dation are not mistaken for reaction to light by having the patient fix the gaze upon some object, the pupils should be equally illuminated and the light should not be too bright, as under these circumstances, a sluggish reaction might be masked. Earlier still than loss of the direct light reflex, can often be found loss of consensual light reflex. This consists in the dilatation and contraction of the pupil of one eye when the other is shaded or exposed to direct light. It is quite possible that the loss of the reflex is an early stage in the development of the Argyll-Robertson pupil and should always be tested for. This condition is usually found when a sluggish light reflex is present. Of the tendon reflexes, the most important is the knee-jerk. This may be normal, exaggerated, diminished or lost on one or both sides.

The exaggerated reflex is most common but the absence of the knee-jerk is of much greater diagnostic importance, as there are many more causes for its absence. This sign also, of course, depends for its importance upon the elimination of other possible etiological factors, especially Tabes. The mental symptoms of the prodromal stage are often not appreciated. In the beginning, the patient like any neurasthenic, has a distinct consciousness of his own illness and observes his symptoms. But with the progress of the disease, he soon loses that sense of being ill, takes no further notice of his own symptoms. Besides what I have mentioned there are several other physical signs and symptoms which are helpful in making an early diagnosis—defective innervation of one side of the face causing a slight paralysis; transitory ocular palsies; diminished sensibility to pain; a dark, pale, greasy complexion; lack of facial expression; jerky tremor of the facio-lingual muscles at the beginning of voluntary movement; slight difficulties of articulation; rushing of blood to head; loss of memory of localization of tactile sensations; loss of cremasteric reflex; attacks of syncope or of mild or severe epileptiform convulsions, gastric and vesical crises. Whenever a patient presents several of the physical signs that I have mentioned, a positive Wasserman will make a diagnosis of Paresis almost conclusive, beyond a doubt. And even in the absence of a positive Wassermann of the blood and spinal fluid, a patient presenting these symptoms together with a clinical history of syphilis should be carefully watched and treated until some definite conclusion has been reached. The serological tests for syphilis have, as a rule, great corroborative significance. A Wassermann test of the blood and of the spinal fluid is usually positive and the cells in the spinal fluid, which normally number

three and not above ten, may be from ten upward to many hundreds. A moderate increase to around fifty is rather in favor of the metasymphilitic disorder, while a count of hundreds of cells is more common in cerebrospinal syphilis, from which we have to make a differential diagnosis, in Paresis. The parietic gold curve is also one of our best diagnostic aids and serves with other symptoms and tests in making our diagnosis.

Several years ago a prominent Syphilographer of Chicago read a paper before the Jefferson County Medical Society in which he stated, with great emphasis, that he believed that it was very detrimental to the patient to administer any form of the arsenical preparations after mental symptoms had developed statement, yet I feel that time and facts have in Paresis. While there is some truth in this proven that he was honestly mistaken in his advice, since many such cases have been treated, some arrested and some with apparent recoveries. But any way he caused many of his hearers, including myself, to become very pessimistic in the treatment of Paresis and many cases have gone untreated. More progress has been made in the treatment of Paresis during the past four years than during the past twenty years prior to that time, according to reliable statistics. The several different stations at which Tryparsamide has been tried out report some very favorable results, stating that Tryparsamide, together with mercury, seems to do what none of the other arsenical preparations have done with incipient or pre-parietic cases.

Some claim as high as twenty-five percent of arrested or apparent recoveries. The Malarial inoculation treatment has met with fairly good results in the hands of several. Personally, I have assisted in treating several cases and I have seen other cases that have shown improvement. The Malarial inoculation is usually followed with alternating doses of Arsphenemin and Tryparsamide of three-tenths gram doses. The Malarial treatment is not difficult and can be carried out in any hospital. It consists of injections, intravenously of 2 cc. of blood taken from a patient who has a well-developed case of malaria of the Tertian type. After the patient has had from twelve to fourteen paroxysms with fever from 104° to 106° or 107 he is then given the usual malarial treatment consisting of ten grain doses of quinine. If the fever is low and the paroxysms are irregular we can stimulate with 15 cc. of milk intramuscularly or use typhoid vaccine. Some cases may run only a few paroxysms and develop jaundice. The treatment must be discontinued and the patient's physical health built up with the arsenicals. Under these conditions the malar-

ial treatment may be given again.

During the malarial inoculation the patient must be thoroughly screened against mosquitoes in order not to carry malaria to other patients. It is preferable to obtain blood from the malarial patient just before a chill if possible as it seems to give best results, but in case this cannot be accomplished, any blood of a malarial case will often give results.

It is only necessary to give one inoculation provided it takes and the fever is high, because it has been thoroughly demonstrated that one treatment is sufficient in a case to obtain results if they are to be obtained in that particular case, and the patient will soon begin to show lucid intervals and gradually become rational. Examination of records at the Boston Psychopathic Hospital reveal that out of two hundred cases that have been diagnosed General Paresis, thirty per cent show arrests of all mental symptoms with negative blood, spinal fluids and gold curve. Many of these cases have long since been rational over the period of time that we give these cases to die and have been restored to their families and working every day. It is the consensus of opinion of those who have been obtaining the best results from these recent treatments, that they believe their success has been due to not only getting these cases under treatment before brain cells actually begin to degenerate, but to keeping up the treatment over a period of several years. As much as five, six and seven hundred injections of Neo-salvarsan and Tryparsamide have been given one individual case with splendid results, considering only and solely the condition of the blood, spinal fluid content and gold curve reading. Personally, I cannot help but feel that we have at last found something that will help us in these poor unfortunate cases that heretofore have been considered utterly hopeless in our hands.

DISCUSSION

E. R. Palmer, Louisville: Probably what I have to say will be considered a voice from the past. I am a reactionary about syphilis, but I am still holding on to the opinions I have had for several years.

It would be extremely fortunate if the optimistic picture Dr. Scott presented to us would develop to be the truth, but I fear that it is purely one of those conditions that we see so frequently in this disease, the remissions that it is known the disease is commonly subject to.

My reasons for objecting to this are twofold. In the first place, the theory on which the drugs are administered is wrong, they are administered on the theory that they are direct parasitocides, that they kill directly the microorgan-

isms causing the disease, and the next is that true paresis represents a degeneration of the nerve substance. It is the result of the invasion into the nerve substance of the spirochetes. It is then due to the fact that the patient has not the proper resistance.

I am not familiar with paresis. I don't get that type of disease to handle. I may say in the thirty years in which I have been working along this line there have only been two patients of mine who had followed my course of treatment who ever developed paresis, two in thirty years. Both of these men were hard drinkers.

I wish all of you could have heard Dr. Goldthwait's little address upon the care of the chronic case. It seems to me that the point here is what modern medicine is tending to right along, to get away from the super-scientific attitude of trying to kill germs. We have gone through various phases in the evolution of medicine as was so beautifully brought out by Dr. Morris several years ago, the heroic age, the pathologic age, etc. We found the bacteria, and we used to say, "Oh, just let us find what causes this disease and we will cure it immediately." But we didn't cure tuberculosis by killing the tubercle bacillus. We don't cure gonorrhea by killing the gonococcus, nor do we cure syphilis by killing the spirochetes.

The gist of the matter is that we should try to find why it is that in the last twenty-five years there has been an enormous increase in the incidence of neurosyphilis. Those of you who have worked with syphilis as I have for many years I am sure will agree with me that there has been a decided change in the type of the disease.

Thirty years ago syphilis was described principally in the textbooks of dermatology. It was looked upon particularly as a skin disease. It was characterized by the manifestations of those more or less repulsive skin lesions, with also lesions of the mucous membranes and the gummatous tissue.

That was syphilis of thirty years ago. What is syphilis today? Syphilis today is a disease of the internal viscera, the cardiovascular system and the central nervous system. Why is that? It has been claimed by some that it is due to the fact that there is a different kind of spirochete, there is a spirochete that has a predilection for the central nervous system. If we are going to follow that line we would have to have a spirochete for the heart, the lung, the liver, and everything else. It is not that at all.

I firmly believe it is due not to any particular drug. When I first started this fight they thought that I was coming to fight arsphenamin. I am fighting that, it is very true, but I am chiefly fighting a method of treatment. I claim that you in your super-scientific ignorance are stepping in and throwing a monkey-wrench into

God Almighty's machinery and upsetting the natural protective machinery by which only is our body able to rid itself of microorganisms and parasites.

The skin is a protective organ, and it is by allowing the disease to give the external manifestations on the skin that we get the protection that protects the central nervous system.

Fournier statistics have shown that ninety per cent of Tertiary syphilis occurred in which the secondary symptoms were absent or extremely mild. My cases over the last thirty years that I have handled have been allowed to come into secondary manifestations. Instead of treating a man before the Wassermann becomes positive, I say by all manner of means wait until it becomes strongly positive and then you know that the body has marshalled its protective forces and is ready to do the battle. Don't wait, gentlemen, until you have come to even the pre-paretic stage, don't wait for that. If you will wait beforehand, if you will wait until the secondary stage of syphilis, I will be willing to stake my future reputation that there will be a decrease of not only neurosyphilis, but cardiovascular syphilis and syphilis of all of the internal viscera. It allows the skin to bear the brunt of the battle instead of the more vulnerable internal organs.

W. E. Gardner, Louisville: I know only in a very scattering sort of way what Dr. Scott had to say, because I did not hear his paper in its entirety.

I got the impression from my talk with Dr. Scott today, however, that he feels from his recent investigation and study of paresis that perhaps we are not treating paresis as intensively as we should. His observations have convinced him that patients who have been kept under somewhat more intensive anti-syphilitic treatment than we are inclined to do in this section have obtained real benefit.

I must admit that my position in regard to the treatment of paresis has been somewhat conservative. Not only from my personal experience in the observation of patients who have been intensively treated by salvarsan, neosalvarsan, tryparsamid, and other forms of arsenicals, but also with the more conservative methods, the use of mercury and general hygienic care of the patient. There are certain things I believe we must bear in mind. In the first place we must know definitely that the case is one of paresis, because if we still have the so-called cerebrospinal syphilis, the meningo-vascular type of syphilis, where we have an involvement of the blood vessels, the meninges, and formation of gumma, it is possible that intensive treatment may accomplish something, but when we get a well developed case of paresis, with typical spinal fluid reaction, positive Wassermann, positive globulin with forty to fifty

cell count, and the paretic gold curve, with certain clinical manifestations which are typical of paresis, and we have these appearing fairly early sometimes in the quality of the knee-jerks, sometimes exaggerated; sometimes unequal; still pupil, some tremor of the voice, eyelids and so forth; if we have a clinical diagnosis of paresis which is confirmed by the laboratory findings, we know that we have a parenchymatous degeneration of the brain. There has been already more or less destruction of brain substance, especially cellular substance of the brain, whereas in cerebrospinal syphilis we still have an involvement of the connective tissue. It is very questionable in my mind as to whether paresis should be treated too intensively. I have seen in many instances a quiet, harmless type of paretic converted into a violent type of paretic with a rapid physical decline.

Sometimes in taboparesis we may have some beginning changes in the optic nerve. It is here that the use of tryparsamid is definitely contraindicated because it will cause a much more rapid destruction of the optic nerve.

The ear men now are beginning to tell us neosalvarsan and the arsenical preparations should not be used in cases of nerve deafness. I have had occasion to observe one or two cases in which the arsenical treatment was recommended in cases of syphilis with deafness that were made definitely worse by the use of the arsenical. We must realize that we are treading on dangerous ground and not attempt to treat every case in the same routine way. We must not treat just the disease syphilis but we must treat the patient. We must bear in mind always that the general resistance of the patient must be kept up. This can be done, of course, by rest, regulation, general hygienic measures, with moderate treatment, perhaps mercury at times, a little salvarsan at others; the use of the iodides do not seem to accomplish anything in paresis after degenerative changes have taken place, but in the cerebrospinal syphilis we do, of course, get very beneficial results from the use of the iodine.

One rather interesting point about cerebrospinal syphilis and paresis is that a good many of the investigators in collecting the statistics have shown that in the typical case of paresis there has not usually been a history of nerve recurrences, that is cranial nerve involvement, with headaches. There seem to be perhaps certain neurotropic strains of the spirochete which have a predilection for brain tissue that are somewhat different from those producing so-called cerebrospinal syphilis.

On the other hand, the cases of cerebrospinal syphilis that show nerve recurrences, cranial nerve involvements, headache, mental habitude, and so forth, seldom become paretic. If we believe that early involvement of the nervous

system in the form of a meningo-vascular syphilis, if not treated intensively, becomes paresis, I think we are somewhat in error.

Recently the work that has been done with malaria in treating paresis has been of interest. In the Wagner von Jauregg Clinic in Vienna they are reporting a fairly large percentage of recovery, yet they say themselves sufficient time has not elapsed to allow them to say what permanent benefit has been gained by this form of treatment.

My position is that we must keep in mind the individual case; we must treat the patient, we must not lower his resistance. If we treat him too intensively and try to reduce his laboratory findings to a minimum, we are likely to do him very great harm in a clinical way. Let's bear in mind always that the anatomical improvement and the laboratory changes are never in proportion to the clinical changes in paresis. We may have clinical improvements, but it is very seldom that we get a negative spinal fluid; the globulin and cell count may be somewhat reduced, but it is seldom that we get a negative Wassermann, and the postmortem shows that in these cases that apparently have improved clinically there is a very extensive destruction of brain tissue.

Jethra Hancock, Louisville: Gentlemen of the Society, I certainly regret that I did not get to hear Dr. Scott's paper. I got to hear just a little of the discussion. Certainly neurosyphilis is a very sad state of affairs at best. It is not a condition that any of us can feel very cheerful about. Not knowing just exactly what the Doctor said in his essay, I would hesitate to undertake to discuss the subject at length. Neurosyphilis is showing a much brighter side. We are finding today that the earlier treatment of it, or more particularly the early recognition of neurosyphilis, with our added armanentarium, such as tryparsamide, is giving results that heretofore we had not expected to get.

I believe there is nothing new to be said in the treatment of neurosyphilis, and particularly paresis, only a strong effort to recognize the condition very early and institute arsenical treatments and particularly the tryparsamide.

As I said at the outset, it is a sad thing that any one should advance to the period of neurosyphilis. In this day of scientific medicine, probably there is no field of medicine in which there has been more scientific research done than in this particular field. We should recognize these conditions and give them suitable treatment so they will not occur.

I am sorry that I am not in accord with my friend Dr. Palmer, and I believe he says he stands entirely alone in his position today (so far as I know he does) —that is that we should let syphilis go on to the secondary stage without treatment. We know that the early recog-

nition of syphilis can be done now by scientific investigation. Before the Wassermann has become positive the diagnosis can be made. If this diagnosis is made, with appropriate treatment the patient never should have a positive Wassermann. Moreover, as far as we can tell serologically or otherwise, the patient should never have any of the manifestations of syphilis in himself or in his offspring. If that is not a cure, I am at a loss to know what a cure would be.

I say these things advisedly from having seen, as Dr. Palmer has seen many hundreds of such cases (I would not gainsay his experience), it occur over and over again where the patient that was treated before the Wassermann was positive, now that we have had ten or fifteen years to observe these cases, absolutely is eighty to ninety-five percent cured serologically, clinically and eugenically, if you will permit the term. What more could we ask?

The burden, I think, is on the medical profession to lay down this dictum as doctors and general practitioners and stick to it, that all lesions of the external genitalia should be regarded syphilis until proven otherwise. This is preventing paresis. We may do this by searching for the spirochaeta. If the lesion is not tampered with and there is no medication, we find them abundantly. If the lesion has been tampered with and we cannot locate the spirochaeta microscopically, then we can turn to the microscopic Kahn test, which will give us our diagnosis before the Wassermann becomes positive.

It seems a pity two men of experience would come before you so contradictory in their viewpoint, but I believe if the procedure that I have laid down is carried out we will have very little paresis.

H. B. Scott (in closing): I have known of Dr. Palmer's attitude toward the treatment of syphilis for some time. I consider him one of the best syphilographers in the country. He knows his work; he does his work well. He has only two cases he knows of that he has treated that ever developed paresis.

I did not read this paper today for his benefit so much as I did for the benefit of others. I read this paper for the benefit of some men who are like the man who brought a case to me four weeks ago. I looked at the man, talked to him a little while and he told me he would rather die than live unless he could get well. He had been wanting to kill himself and was depressed at times. These were the only symptoms he had. I asked the doctor if this patient ever had syphilis. He relied, "Not to my knowledge."

We made a blood Wassermann and found it four plus. The man had been in that condition for three years. If we could have had a Wasser-

mann three years before and could have had the man treated, I believe he would be alive and well today.

I think we are far behind the times in the treatment of paresis or pre-paretic cases.

When Dr. Solomon of the Psychopathic Hospital of Boston a few months ago began telling others and myself about some patients that he had that had recovered from paresis, I almost insulted him by the questions that I asked. I told him in a joking way, "I am from the state next to Missouri. You will have to show me."

He said, "Give me a little time and I will show you."

He showed us cases that they had had under treatment from six to nine years. Many of these cases are well today and mentally normal. The only question in my mind is whether they were correct in their diagnosis of general paresis. I believe they were, and that they know more about it than we do. As I cited in my paper, out of 200 cases that they have treated, all of these cases diagnosed as general paresis, show a percentage of about thirty that have been arrested and some of them seem to me to be normal. These men are at work, restored to their families and are getting along nicely. If they can do that I think we should give the patient the benefit of the doubt and try the same thing.

For a number of years in Kentucky we have been doing nothing with the paretic who shows mental symptoms.

A prominent doctor of Chicago a few years ago told us that we made a mistake if we treated these cases after they showed mental symptoms. I for one discontinued to treat these cases but from now on I am going to treat them because I believe I can help these poor suffering people.

Cause of Epidemic of Sore Throat.—Hemolytic streptococci were found by Coleman and Wheeler to be the predominating organisms in throat cultures from the acute cases studied in an extensive epidemic of septic sore throat. The toxicity of twelve strains was tested. One produced a potent toxin neutralized by the standard scarlet fever antistreptococcus serum and also by the patient's serum. The other eleven produced little or no toxin. The precipitinogens and agglutinating antigens prepared from four of the nontoxic strains could not be distinguished from this prepared from the one toxic strain, or from the Dochez strain of scarlet fever streptococcus. Among a group of twenty convalescents, 30 per cent gave definite skin reactions to a standard scarlet fever streptococcus toxin, which is approximately the same proportion as in a group of normal persons of the same age, (8 to 50 years).

ANGINA PECTORIS.*

By LEON K. BALDAUF, Louisville.

On July 21, 1768, Heberden, at the Royal College of Physicians, read a paper entitled "Some Account of a Disorder of the Breast." The abstract published in Osler's Monograph will be given.

There is a disorder of the breast marked with strong and peculiar symptoms, considerate for the kind of danger belonging to it. The seat of it and the sense of strangling and anxiety with which it is attended make it not improperly to be called angina pectoris. Those who are afflicted with it are seized while they are walking, and more particularly when they walk soon after eating, with a painful and most disagreeable sensation in the breast, which seems as if it would take their life away if it were to increase or to continue. The moment they stand still all this uneasiness vanishes. In all other respects the patients are at the beginning of this disorder perfectly well and in particular have no shortness of breath from which it is totally different.

The name angina, which Heberden adopted means strangling and this would not seem satisfactory but for the fact that the two main features of the disease,—anxiety and anguish,—have the same Greek derivation as angina.

The first attack of John Hunter, in 1773, described by his nephew, Everard Home, and quoted in Osler's Monograph, is as follows:

While he was walking about the room he cast his eyes in the looking glass and observed his countenance to be pale, his lips white, giving the appearance of a dead man. This alarmed him and led him to feel for his pulse, but he found none in either arm. The pain continued and he found himself at times not breathing. Being afraid of death soon taking place if he did not breathe, he produced a voluntary act of breathing by working his lungs by the power of his will. Following another attack he was seen by his friend and pupil, Edward Jenner. The letter which he wrote regarding John Hunter's case to Heberden quoted in full in Osler's Monograph is as follows:

"When you are acquainted with my motives I presume you will pardon the liberty I take in addressing you. I am prompted to it from a knowledge of the mutual regard that subsists between you and my worthy friend, Mr. John Hunter, when I had the pleasure of seeing him at Bath last autumn. I thought he was affected with many symptoms of the angina pectoris. The dissection, as far as I

*Read before the Kentucky State Medical Association, Frankfort, September 20, 21, 22, 23, 1926.

have seen, of those who have died of it throws but little light on the subject, though in the course of my practice I have seen many fall victims of this dreadful disease, yet I have only had two opportunities of an examination after death. In the first of these I found no material disease of the heart, except that the coronary artery appeared thickened. As no notice had been taken of such a circumstance by anybody who has written on the subject, I concluded that we must seek for other causes as productive of the disease; but about three weeks ago Mr. Paythros, a surgeon at Ross, in Cherfordshire, desired me to examine with him the heart of a person who had died of angina pectoris a few days before. Here we found the same appearance of the coronary arteries as in the former case, but what I had taken to be an ossification of the vessel itself, Mr. P. discovered to be a kind of firm fleshy tube formed within the vessel, with a considerable quantity of ossific matter dispersed irregularly through it. This tube did not appear to have any particular connection with the coats of the artery, but seemed to lie merely in simple contact with it. As the heart, I believe, in every subject who has died of the angina pectoris has been found extremely loaded with fat, and as these vessels lie quite concealed in that substance, it is possible this appearance may have been overlooked.

The importance of the coronaries and how much the heart must suffer from their not being able to perform their functions is a subject I need not enlarge upon. Therefore, shall just remark that it is possible that all the symptoms may arise from this one circumstance.

As I frequently write to Mr. Hunter, I have been sometimes in hesitancy respecting the propriety of communicating the matter to him and shall be exceedingly thankful to you, sir, for advice upon the subject. Should it be admitted that this is the cause of the disease I fear the medical profession must seek in vain for a remedy, and I am fearful if Mr. Hunter should admit this to be the cause of the disease that it may deprive him of the hope of recovery."

The details of Hunter's case have frequently been mentioned. He often said that his life was in the hands of any rascal who chose to annoy and tease him. This prediction came true. Following a meeting of the Governors of St. George's Hospital, someone contradicted him; he left the room in a rage and in the next room gave a deep sigh and fell dead. There was marked calcification of the coronary arteries with dilatation of the aorta.

Sir James McKenzie's definition of angina pectoris is as follows:

"Angina pectoris is a condition in which a

series of symptoms are produced by the heart in which pain is the most prominent; in its most characteristic form it occurs in attacks, the patient being seized with pain, at first slight and ill defined, but more or less speedily attaining a degree of great severity. The pain usually lasts a few seconds, or a few minutes, generally passing off completely, but sometimes remaining for hours. Other symptoms may be present, such as contraction across the chest which sometimes precedes the pain, a sense of depression, pallor in some, flushing in others, and an increased flow of saliva. The pain is always felt in definite regions, generally limited to the front of the chest and in the arms, most frequently on the left side. It may be felt also along the jaws, in the neck and behind the ears."

Various explanations have been given as to the origin of angina pectoris. First—The theory of heart muscle failure, expounded enthusiastically by McKenzie, and into which I shall go into rather minute detail. Second—That of coronary artery disease. At the present time a difference of diagnosis must be made between coronary thrombosis and angina pectoris.

The theory of coronary sclerosis, previously held by many, cannot apply to all cases however, because marked cases of coronary sclerosis may appear at autopsy and during life there may be no symptoms of angina.

Third—A condition of paroxysmal vasomotor spasm of the coronary arteries analogous to the spasm of the vessel of the lower extremities which give rise to symptoms of intermittent claudication has also been given.

Fourth—Allbutt's exposition in which he describes the pain of the disease to be at the base of the ascending aorta. He considers that owing to the changes in the vessel wall at the base of the aorta, there is an irritation of the nerve endings of the sympathetic cardiac-plexus, and with the rise of the intra-aorta pressure there arises pain.

Fifth—Reid's explanation as to the pain in angina is dependent on a peripheral vasodilation and a splanchnic vaso-constriction. Daniel Opolu explains attacks as follows:

"The anginal attack arises from a disturbance of the balance between the work of the myocardium and its blood supply through the coronary arteries. The possible solution of the cause of angina pectoris and the rational treatment of angina probably lies in the study of heart failure, the study of visceral pain and the nature of referred pain.

Heart Failure—When anything abnormal concerns the heart the first question which we ask is "Is there any heart failure?" A heart may be perfectly efficient when the patient is at rest, but after a slight effort with

little reserve there may be indications of cardiac failure, because certain symptoms appear which were not present before the effort was made. We have as the first evidence of heart failure, an impaired circulation which manifests itself first in breathlessness with a loss of reserve power. Later on this may develop into a general anasarca, enlargement of the liver and other signs of poor circulation. In addition to the early symptoms of breathlessness, we may also have pain. This pain may be due to exhaustion of the heart muscles. First, from overwork. Second, to poor coronary circulation. Third, to diseased muscles. Pain in the viscera and other tissues may also be due to violent contractions of the muscles, to exhausted muscles, and to tissues deprived of blood. As examples of violent contractions, corresponding to overwork and heart muscle giving rise to pain, we have symptoms of colic, renal, bowel and gallstones. We have as an example of exhausted muscle giving rise to pain, the pain in voluntary muscles after over-exercise; in the athlete, and mountain climber, after the over-use of muscles not ordinarily exhausted. As example of pain in muscles due to exercise, plus poor circulation, we have a typical case of intermittent claudication, where after walking a few blocks the patient is pulled up with pain due to defective circulation, the result of an atheroma or marked arterio sclerosis. According to this our conception of angina now is heart failure produced by exhaustion of muscles, result of diseased muscles or poor coronary circulation, which, through the nervous system, gives rise to pain and other evidences of nerve stimulation and sensory disturbances.

The Nerve Supply of the Heart: The heart is supplied by the vagus and sympathetic nerves. The vagus slows the heart and the sympathetic increases the rate. The sympathetic nerves of the heart arise in the lower cervical and upper four thoracic ganglia of the sympathetic chain and pass to the plexus at the root of the aorta, and thence to the heart itself. They enter the spinal cord by the spinal root of the fourth, third, second and first dorsal areas and the eighth cervical.

These spinal nerves are distributed to the external body wall from the lower part of the chest about the level of the fifth interspace in front and in the axilla, and, roughly speaking, down the inner side of the upper arm and the ulnar half of the forearm to the little and ring fingers. These nerves are also distributed over a portion of the back of the chest. This is the location or site of the pain in angina pectoris.

Relation of the Vagus to the Sensory Nerves: The pain behind the ear and the back of the head is from the distribution of

the second and third cervical nerves and extension of the root of the vagus in the medulla brings it in close relation with the origin of these nerves.

The Cause of Cardiac Pain: The heart receives its blood supply from the coronary arteries. In response to effort, an increased amount of blood is necessary to carry on the cardiac function. If there is sclerosis of the coronaries, the necessary supply of blood is lacking and angina will result due to effort.

Pathological examinations have shown that angina may have existed without marked or distinct changes in the coronaries. The explanation of the condition giving rise to the pain must lay in the exhausted muscles. We know that in healthy individuals after very marked exertion there may be severe pain in the chest. In typical angina where no coronary sclerosis is found the myocardium may show disease and a condition similar to exhaustion due to faulty blood supply may occur. There are cases of so called pseudo angina where the heart muscle is not severely injured, where there is only a slight sclerosis of the coronaries and where the pain is dependent upon a very highly sensitive nervous system. It frequently happens that in certain toxic and neurasthenic states, the heart muscles may be injured along with the cerebro-spinal nervous system; the slight injury to the muscle giving rise to a stimulant sufficient to irritate a very sensitive cerebro-spinal nervous system.

Angina, true or false, must therefore be considered as typically reflex, just as we have reflex pains occurring in gall bladder and renal stone attacks. In the gall bladder and in renal attacks the pain is referred to typical regions, so here we have the pain from a diseased muscle due to coronary sclerosis or muscles showing myocarditis giving rise to pain which is referred to certain areas. These areas depend upon the connection between the autonomic fibres and the fibres of the cerebro-spinal nervous system. This stimulation of the excitable nervous system is especially noticeable in what is known as status-anginosus, where the attacks are caused by slight stimulation and where they occur for no particular reason except for the lifting of an arm or turning in bed.

PRIMARY ANGINA—SECONDARY ANGINA.

Primary angina occurs where there are definite and permanent changes in the heart muscle, giving rise to a condition which reflectly affects certain cases through the sympathetic and central nervous system.

In secondary angina the heart changes are slight but owing to certain toxic conditions the reflex pain caused by irritation of the heart muscles through the sympathetic and central nervous system is similar but disap-

pers when the toxic condition—the cause of the pain—is overcome.

Signs of Gravity: In the study of his own cases and the review of 2,000 other cases, McKenzie found it difficult to discover the signs which would differentiate the mild from a severe type of the disease.

High Blood Pressure: The relationship of high blood pressure to angina is not positively settled. Frequently during or before attacks the pressure is very high but in a number of instances the pressure may be normal or below normal. High blood pressure is a bad significance if associated with signs of heart failure. An unfavorable sign is always an associated Cheyenne-Stokes breathing or pulsus alterans.

Angina Pectoris Sine Dolore: There are a few cases without pain in which there is a sense of great compression over the chest with a sensation of impending dissolution. These are cases probably of abnormal rhythm as fibrillation or flutter.

Treatment: The essential point in the treatment of angina pectoris is the diagnosis. Is it true or false angina? In many instances time is essential for this determination. Statistics, however, are helpful. McKenzie states, for instance, that rarely has he seen a case of true angina in the female below fifty. We are aware that the essential cause of true angina is a feeble heart muscle and our principle aim should be to protect this weakened heart muscle from whatever may tend to exhaust this muscle. Secondly, we should avoid all circumstances which might provoke attacks. We know how frequently attacks follow a heavy meal; these meals should be light and if the appetite requires they should be frequent. All digestive disturbances should be corrected. Frequent exposure to cold brings on an attack; this may be prevented by taking a hot drink to prevent chilling, or the bed may be warmed before the patient retires. In differentiating between true and false angina the recognition of the conditions which might act reflexly and stimulate angina attacks must be considered. With a hope that certain toxic states may be the cause of these symptoms, foci of infection must be sought and removed. True angina attacks may be made less frequent and less severe following particularly the removal of abscessed teeth.

Use of Drugs: No drug can remove the organic basis of the disease. We have shown, however, that a hypo-sensitive nervous system is responsible for the reflex symptoms which are produced. Those drugs, therefore, which will render a nervous system less susceptible to stimulation must be used. Frequently large doses of bromides, especially bromide of ammonia, have been of decided

benefit. When these preparations are not successful we must resort to chloral or opiates.

AS TO THE TREATMENT OF ATTACKS.

We must for the most part rely on the vasodilators, nitrite-amyl in four or five drop doses, nitro-glycerine 1-100 grain doses by mouth or hypodermically. McKenzie recommends when necessary 1-100 of a grain of nitro-glycerine, possibly every five minutes until four or five tablets are taken; finally, 1-4 grain tablet of morphine may be necessary every fifteen minutes or chloroform must be resorted to.

Recently the surgical treatment has been resorted to and I shall briefly summarize the results which have been obtained. The operative procedure adopted differs to a certain extent with different surgeons, but in the main consists in the removal of the cervical sympathetic ganglia. The conclusions arrived by Levine and Newton are as follows:

1. Some patients suffering from angina have been strikingly helped by cervical sympathectomy.

2. A proper selection of cases ought to diminish markedly the immediate surgical mortality.

3. It is absolutely necessary that accurate diagnosis be made and that cardiac infection be not confounded with angina pectoris. Furthermore, the study of each patient should indicate that there has not been any congested heart failure, that the musculature of the heart is satisfactory and preferably that there is no valvular disease.

4. A detailed report is made concerning seven patients who were selected for sympathectomy; they are all alive three months to two years following operation. Three were rendered absolutely free from angina attacks immediately and have remained so; three continued to have typical angina attacks after the operation, but nevertheless, considerably improved in that it required a greater effort to bring them on. One was made neither better nor worse. Of these latter four, three have since become practically free from attacks as result of medical care. The eighth patient died on the day of the operation. In general, it is felt that the operative measure of angina pectoris, if carried out on properly selected patients, are distinct additions to our means—therapy.

Bear in mind that angina pectoris is associated with marked sensory disturbances and that in another disease, *tic douloureux*, we have also marked sensory disturbances. Swetlow suggested the paravertebral alcoholic block in cardiac pain. His discussion is as follows:

"In the brief review of the various surgical procedures it is quite evident that the oper-

ators were and still are experimenting as to the pathway of pain. The variability of the nerve structures in the neck, the extensive inosculation between the vagus, superior middle and inferior cervical cardiac nerves, the numerous anomalies of structure, make it quite evident that inconstant results are to be expected from such surgical procedures. The fact that most of the impulses must enter the dorsal root ganglia before they can enter the spinal cord, suggests a different site for therapeutic procedures. Since the pain stimuli from the heart must enter the spinal cord via the dorsal root ganglia, an irritation of the small cells in the ganglia is set up. Since these pain-bearing fibers, which are peripheral arms of the small cells in the dorsal root ganglia, are poorly myelinated, they are easily destroyed by alcohol, probably producing a wallerian degeneration. In a group of eight cardiac patients suffering from attacks of severe precordial pain, who were treated by paravertebral alcohol injections of the dorsal root ganglia, prompt and satisfactory relief from pain was secured in every instance."

The freedom from pain following a single injection has usually lasted several months. In one patient, who was reinjected after four months of relief, there has been a second period of comfort lasting several months.

No complications were encountered and no serious after-effects were seen."

DISCUSSION

J. G. Carpenter, Stanford: I have been so fortunate or unfortunate as to have several attacks of angina, from overwork, loss of sleep, trying to get ahead of the other fellows, running the race with swiftness and thriftiness. My endocrine organs became upset from functional disturbances disfunctioning.

In driving over a rough road I dropped the buggy lines several times and thought I would die. I carried amyl nitrite with me, but since I have learned how to live I am all right. I found the real cause was gastro-intestinal dyspepsia and in the rectum. I had a Whitehead operation performed by Dr. McChord and I have been free from attacks ever since, but was a year or more recovering from the extreme neurasthenia. Dr. George P. Sprague cured me of the latter.

I had a patient in a country home whose breathing was 12 and pulse 18. He was in a state of arteriosclerosis from his big toe to the crown of his head and had dyspnea and angina. I got on the good side of him while he lived and finally I got on the inside of him when he died. I got his heart, whole arterial system, and before he died his arteries felt like pipe stems. I found numerous spots of fatty degeneration and calcification verified by the microscope. I found points of calcification that you could not cut

with a sharp Barlow knife, and at other points I found a mixture of calcification and fatty degeneration.

The coronary artery was in a state of arteriosclerosis with lime and fat deposits. I got a complete section of heart and of the valves of the heart, and blood vessels and presented them to the Central District Kentucky Medical Society. He not only had frequent attacks of angina, but amyl nitrite relieved him and he got along very well.

Angina is a neurosis at times. I have had many an attack that I thought would kill me. Now my endocrine glands are all right. I know how to live, and I expect to be in this Association a hundred years from now. I have taken a general anaesthetic six times and have always awakened a better and happier doctor.

M. Casper, Louisville: Speaking to the surgical side of this disease we all watch with great deal of interest the advance of surgery on angina pectoris. Of course the time has been too short to see what the permanent results of these operations will be. However, it is not as formidable an operation as you would think from first glance. It can be done usually under a local anesthetic and all it requires is a good knowledge of the anatomy. It is not a dangerous or formidable operation.

It has been done a good deal in Germany. I was over there last year and had the pleasure of seeing some of these cases. The longest one was present two years. That in itself is a long time when you come to think of the violence and great pain of this disease.

One of the greatest points brought out is that of prevention, the proper way to live, as Dr. Carpenter has said. This comes under the diseases of preventable medicine. Dr. Baldauf has given a splendid paper on this age-old subject and as I say we may hope for something from a surgical standpoint. Medicine except as a preventative and relief gives very little in the way of a cure.

W. A. Jenkins, Louisville: Angina pectoris or pain in the breast or chest isn't a disease at all, it is a symptom, it is simply a clinical syndrome underlying the condition. A great many of these changes are in connection with the cardio-vascular mechanism. I think in this misconception arise the misunderstanding and arguments into which a great many of us get regarding this matter. This condition is a symptom. It is an important, prominent and ugly symptom, but it is a symptom just like hypertension is a symptom, just like albuminuria is a symptom, just like jaundice is a symptom. If a man who is accustomed to finding a postmortem two or three cases with a stovepipe aorta simply slammed down on the top of the heart, mashing down on the arterial supply of the heart muscle, he believes that it is aortic in origin.

A man who has made three or four postmortems of prominent individuals and finds prominent coronary disease with complete stoppage feels it is entirely a question of coronary artery. Another individual will find an extremely degenerative heart muscle with fat, sclerotic, calcified areas of the heart. He feels it is a myocardium that is at fault, and so on we go.

I believe we should take into consideration that this is a symptom and that in all true cases practically, we are prone to find certain changes in connection with the cardiovascular mechanism.

As to the origin of this thing we are not absolutely able to say. It could be angina pectoris and the prominent changes be in any one of these patients and yet the gentleman holding to the coronary theory would not be wrong.

It seems to me we should bear in mind the fact that we shall have to hold to the pseudo angina or anginoid, which means angina-like, because it may be ischemic, it may be vasomotor, and so forth, and that individual dies of accidental death and a postmortem be done and no pathology be found.

On the other hand, you may find a great deal of pathology in these various structures. Dr. Baldauf has summarized very beautifully the changes contained in the modern textbooks along these lines. As he says, the best thing to do is not to be in a hurry about your diagnosis, but make an exhaustive clinical study of your case. One of the chief elements in the study of your case is time. Let him go over a considerable period of time and see the frequency and the character and the order in which these symptoms appear.

Leon K. Baldauf, Louisville (in closing): In reply to what Dr. Anderson said, I probably did not make myself exactly clear. Dr. McKenzie has been the great exponent of weakened heart muscle as the primary cause of the symptom complex described as Angina Pectoris. I intended to emphasize Dr. McKenzie's view. If you would have an unbiased opinion after a review of the different theories and of the literature we would probably assume a combination view. We have a nervous system that has been injured or irritated and at the same time we have a myocardium which show some change one way or another. There may not be any microscopic change, there may be microscopic change and there may be an involvement of the nerve tissue supplying the heart. I think the point Dr. Jenkins brought out is most important and that is this: the difficulty in making an absolute diagnosis. Whether we are dealing with cases of Angina or Pseudo-Angina in making the diagnosis the time element is most important. In many cases where we have patients suffering for years the probability is that the symptom complex which we are observing is not a true angina pectoris, is not dependent on

a condition in the heart muscle itself, but is a reflex condition and is dependent on lesions in other parts of the body.

THE BETTER STUDY OF CARDIAC SYMPTOMS.*

By W. W. ANDERSON, Newport.

Nature takes good care of the heart. It is excellently adapted to its intended task. It has great immediate reserve power. Thus a healthy man may spring up suddenly from lying in bed and go through strenuous exercise without inconvenience, because the heart instantly takes on the additional load due to the erect posture and adds to this the burden of heavy exercise, calling up its abundant reserve force to meet the changed condition.

It also displays remarkable capacity for recuperation and repair of damaged suffered. It may be pressed upon by pericardial effusion but its muffled beat goes steadily on with little change for a long time. It may be shoved out of place by pleural effusion or chest tumor or pulled to one side by adjacent adhesions with little loss to its functional efficiency. Its valves may be impaired and it will grow muscle to overcome the effect of the damage. Its signal system of nerve and muscle communication may break down and the ventricles will establish a rhythm of their own and circulation is carried on. It well illustrates the saying that if Nature were not the great healer she is the reputation of half the physicians and all the surgeons would instantly be ruined.

The heart is seldom the seat of primary disorder. It may be the first organ to give way under terrific strain, as in the acute dilatation due to a marathon race, but it still remains true that most of its disorders are brought to it, being secondary to disease elsewhere in the body.

The heart is often the seat of inflammatory disease, endocarditis, pericarditis and myocarditis, none of which are primarily cardiac in origin. They are secondary to such general disease as the acute infections, rheumatic fever, scarlet fever, diphtheria, typhoid, influenza, etc. or to local infections in the tonsils, teeth, sinuses, ears, appendix, gall bladder, prostate or elsewhere.

In connection with this classification let us get clearly in mind the distinction between myocarditis and myocardial insufficiency. The former is an inflammation of the heart muscle usually associated with and a part of or a sequel to acute general or local infection such as scarlet fever, rheumatic fever, septicaemia or diphtheria. Myocarditis is never long continued though it may leave permanent dam-

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age or weakening of heart muscle in its wake.

Myocardial insufficiency, on the other hand, is a weakening of the heart muscle without actual cardiac inflammation being present. Such weakening may be the result of former myocarditis, of toxæmia from disease or drug poisoning or of prolonged strain as of over work of hypertension or of undernourishment of the heart muscle secondary to coronary sclerosis, etc. Myocarditis ends in death or recovery or myocardial insufficiency, but it ends. It does not continue indefinitely. The term "chronic myocarditis" is usually a misnomer for myocardial insufficiency, which may be a sequel of myocarditis or may have come from another cause.

This classification of myocardial disorders is purely clinical but has its counterpart in the pathological classification into myocarditis on the one hand and myocardial degeneration or fibrosis on the other. Since our work deals almost wholly with the clinical problem rather than the pathological one it is best for our purposes to adopt the clinical classification of myocardial disorders.

The various heart inflammations are each rather clearly defined clinical and pathological entities. The signs and symptoms of each are well understood, making possible as high a percentage of accurate diagnoses in this as in other fields of internal medicine. Pathologically there is no difficulty in establishing the diagnosis from the study of the specimen. Only a little less clearly defined clinically and quite as well known pathologically are degenerative cardiac disorders resulting in myocardial insufficiency.

There is a third group of heart disturbances that is ill defined, the arrhythmias and tachycardias. While important contributions have been made in this field by the polygraph and the electrocardiograph, the etiology and nature of these disorders remain too obscure for definite classification. Some of them we charge vaguely to nervous origin. Others are traceable rather clearly to toxæmia originating in other parts of the body. Enough is known concerning them to warrant the general statement that they are probably also of extracardiac origin as the better known heart lesions are proven to be.

If, then, the heart is seldom or never the seat of primary disease, and if it has great recuperative power when the source of its trouble is removed, it follows that the first duty of the doctor after a diagnosis of heart disorder is made is the discovery of the underlying cause.

The real difficulty in most heart cases is the finding of the original cause of the cardiac lesion or symptoms and securing its correction. We are too readily content with attaching a name of some diagnostic signifi-

cance to the heart symptoms and letting it go at that. Thus we see "tachycardia" given as a diagnosis. It requires no medical judgment to say the patient has a rapid heart action. He knows that too well himself and may have come under examination in unwarranted anxiety on account of it.

No better is the more common diagnosis of "myocarditis" when it is made to cover the single symptom of rapid heart action. Rapidity of action in a heart that responds to exercise by normal rise in rate and blood pressure that falls in two minutes to the pre-effort reading is not sufficient evidence to warrant a diagnosis of myocarditis or myocardial insufficiency. Indeed such a response in the presence of tachycardia is a striking proof of myocardial soundness. That a myocardium long subjected to the strain of over work incident to a persistent tachycardia will ultimately fail and degenerate is highly probable. So long as it has not failed no myocardial disorder is shown.

A well established heart diagnosis covered by adequate physical findings is not sufficient in itself. Thus the thoroughly proven diagnosis of aortic stenosis is not sufficient alone. Whence came the valve lesion? Is it rheumatic, syphilitic or arteriosclerotic in origin? What associated lesions or aggravating circumstances are present tending to increase the valve disorder or to prevent myocardial development to compensate for it? All of these questions must be solved as a part of the complete cardiac diagnosis.

The underlying causes of heart disorders are hard to find because they are numerous, varied, often obscure and sometimes they have entirely disappeared except as a matter of history, and the history may have been forgotten by the patient. Thus a septic sore throat of short duration may leave in its wake a permanent valve lesion that may escape detection till the sore throat is forgotten. Pneumonia, typhoid, influenza, etc. may be complicated by myocarditis and followed by myocardial insufficiency from which the patient, especially the middle aged or older, perhaps never fully recovers. The slow toxemia and blood destruction of hookworm, syphilis, or chronic malaria may lead to myocardial impairment though the underlying cause be so little apparent in the history or direct symptomatology as to require the most thoughtful consideration to establish its presence. The chronic toxæmia and heart overwork associated with Basedow's disease or slowly developing cardiorenal disease will bring about myocardial damage and symptoms referable to the heart and warranting a definite cardiac diagnosis, even when the real cause lies obscurely in the background and discoverable only by patient, thoughtful, thorough search.

Among unsolved cardiac problems are many cases with ill defined complaints referable to the heart, such as cardialgia or precordial pain though we find no reason for it, palpitation though we discover little or no tachycardia, breathlessness, though the response to effort is normal, sense of goneness under excitement or exertion though there is no real dyspnoea or evidence of weakness and particularly of heart consciousness with no apparent reason. A large majority of these patients are of the slender, poorly developed, ptotic type.

No casual examination of these cases is likely to disclose the whole truth as to diagnosis or to lay the foundation for effective treatment. Three broad paths to error are widely open. It is all too easy to say there is nothing wrong, to dub the patient a neurotic or to charge his symptoms vaguely to some endocrine disturbance. There is something wrong with these patients though it be only a mental bias that leads to morbid thinking. If the patient is a neurotic, the neurotic state is worthy of profound study that we may know its nature and origin and the mechanism by which it disturbs physical and mental functions. If he has an endocrine disorder we should know in what it consists. The endocrine and minor neuropsychiatric fields are so little developed that they offer a great temptation to use them as dumps for the disposal of all troublesome things of doubtful worth for which we find no convenient place in the well ordered sections of our diagnostic storehouse.

Thoughtful and thorough history taking and examination will rescue many of these cases from the dump of diagnostic disorders and place them on the solid foundation of established diagnosis ready for helpful treatment. Some will be found mildly anaemic of the secondary type or more rarely of the primary, if indeed there be truly such a thing as primary anemia which the writer gravely doubts. If anaemia is present it will account for many heart symptoms, but it by no means settles the problem. The cause of the anaemia must be found and corrected.

Some of the vague heart cases will show a mild leucocytosis and call for a minute search for areas of sepsis or minor infection. A good many of them will give on inquiry a history of constipation and evidence of intestinal stasis with attendant toxic absorption perhaps in part due to ptosis.

A few will be found to have intestinal parasites and will show eosinophilia and will clear up in a few weeks after their eradication. Syphilis is extremely common as a latent malady and malaria rarely so, both likely to cause symptoms the patient refers to the

heart. No case with complaints referred to the heart and not clearly accounted for should be dismissed without blood studies.

Rather frequently patients of the type under discussion will present one or more of the symptoms of hyperthyroidism of mild degree and some of them will show a slight increase of basal metabolic rate. Basal metabolism must be taken at least three times on different days and under proper conditions to be sure of it in doubtful cases. The finding of a basal metabolic rate persistently slightly elevated does not settle the diagnosis with final certainty for mild hyperthyroidism is sometimes secondary to focal or general infection elsewhere and perhaps even to disturbed mental states all of which must be identified or excluded.

A good many of these vague heart complaints, hard to explain and harder to deny, are traceable to mental rather than to physical causes. The Irish soldier, who claimed to have been shot through the chest at the 4th intercostal space one inch to the left of the sternum, explained his escape from death by the statement that his heart was in his mouth at the time. Fear, anger and embarrassment have their instant reaction in the circulatory system. It is said that love sighs and grief carries a heavy heart. The words "weary" and "worry" are of similar Anglo-Saxon origin. Mental states, particularly in the emotional realm, tend to produce their reaction in the physical being and most of all in the circulatory apparatus. Hence the world old idea imperishably treasured in the languages of all times and all people making the heart the seat of the emotions.

The so-called neurasthenic lives largely in the realm of his emotions. He is a hobby rider and his hobby is himself. He is self-centered, emotional and introspective. His reactions to the stresses of life, both mental and physical, are exaggerated and out of proportion to their value. The physician who omits study of mental and especially emotional states in the investigation of vague heart symptoms is neglecting a very important duty. Personal, domestic, financial or social maladjustment may be the principal or even the sole cause of cardiac complaints. To remedy these conditions the doctor must have curative means beyond the use of drugs and the scalpel. He must be able to cast out devils.

When we have exhausted the diagnostic resources of present day medicine and psychology, there will still remain a few cases whose cardiac complaints are neither negated nor adequately explained. It is very easy to add these to what some have called the irreducible minimum of diagnostic impossibilities.

Let us believe that as a finality there is no such thing as a diagnostic impossibility for the impossibility of today will be the accomplished fact of tomorrow. The real diagnostician is not only familiar with the well beaten paths of diagnostic practice, but travels also the less frequented byways of the rarer diagnoses and when all paths fail he ventures the wilderness of the unknown and blazes away that others may follow. So did Sydenham in identifying and classifying the eruptive fevers. So did Pasteur and Koch in proving that disease is not due to an evil humor in the blood. So did Ehrlich in 914 studies in combinations of arsenic before he developed one satisfactory as a spirocheticide and tolerable to the living human tissues.

With the ever increasing importance of cardiac disorders as a cause of morbidity and mortality, with the wealth of clinical material constantly flowing through our offices, with the abundance of modern means of diagnosis, with the example of great achievements in the past and the inspiring call of great things to be done let us not be content to relegate difficult heart symptoms to the realm of the unknown as though the truth were unknowable, for there are few things hidden from him who diligently applies himself to the search.

DISCUSSION

Curran W. Pope, Louisville: When one attempts to discuss a paper as broad in its scope and as far reaching in its meanings as this of Dr. Anderson, he will find that the limited time given him is entirely too brief.

I shall only try to speak to one phase, and to a part of that phase upon cardiac disturbance upon which the essayist has touched, namely, the neurotic heart.

I was very much pleased to hear him say that neither physical measures nor chemicals that we call drugs can as a rule reach these cases. These are the cases that require the psychologist as well as the neurologist to relieve. These are the ones from whom we must pluck out the rooted sorrow, those to whom we must apply psychotherapy, speaking in the broad sense of that word.

Psychotherapy does not, however, consist simply of trying to persuade, trying to impress or trying to talk the patient out of the condition. It oftentimes does more harm than good. What is needed in these cases is a persistent careful and constant digging and grubbing for the underlying factor, and this can be obtained only by a modified or a complete psychoanalysis of the individual.

The essayist did not dwell upon one psychological feature, I suppose he had too much to write of otherwise, and that is the constant, the very frequent presence, of the inferior complex in cases of cardiac neurosis. These cases often

start in a complex that has no relationship whatsoever to the heart, but by the gradual accretion of emotive material to the original center or to the original emotion, a certain edifice is built up of which the heart is a part, and the symptoms of which will disappear when that edifice is torn down and the patient oriented with reality.

I will venture the assertion that there are few doctors who understand and appreciate the extensive number of cases suffering from the inferiority complex.

Fear is a very potent and positive agent, especially those fears that the patient cannot give free discharge to, that are without question kept pent up in his or her soul, feeding on them until finally there may be a partial disassociation of personality, that is to say, an endeavor to forget the condition, to throw it aside, to have nothing to do with it, but you can't do that with your mind. The individual who tries to throw mental states aside, who tries to forget them, is but laying the foundation stone for future disablement and future trouble. There is only one way in the world to overcome a condition of that kind, and that is to boldly face it, boldly overcome it and conquer it. It is the occupation of the neuropsychologist to bring these facts to the patient, to teach him how to face his own difficulties, and to reorient them with reality.

So that fear may not only be a causative factor in neurotic manifestations of the heart, but it may cause constant repetition upon repetition of the condition as well as at all times accentuating any other form of cardiac trouble that may be present.

It is an interesting fact to know how much psychology there is always with the heart.

Fundamentally it is based on the knowledge that if the pump stops, all the rest stops in other words, death takes place. It is a fundamental factor in the causative condition, that if they have heart trouble it keeps on accentuating and making the condition worse.

Reactivation of Specific Antibodies in Pulmonary Tuberculosis.—Duprez' observations were made on ten patients with various forms of pulmonary tuberculosis, who presented a negative reaction to Besredka's tuberculous antigen. The reaction became strongly positive in all three weeks after a subcutaneous injection of 2 cc. of horse serum. This did not occur in clinically nontuberculous individuals. This suggests a possible way to unleash the activity of tuberculous antibodies and consequently to enhance the diagnostic value of the Bordet-Gengou reaction. The latter is usually negative in 15 per cent of cases of unquestionable pulmonary tuberculosis.

CANCER OF UTERUS, TREATMENT IF SEEN EARLY; IF SEEN LATE.*

By ALLEN DONALDSON, Carrollton.

Cancer of uterus is one of the largest and most important problems that the medical profession and scientists are trying to solve.

In my opinion, one of the most important steps that has been taken to eradicate cancer, has been the education of the public warning them of its horrors, and the necessity of an early diagnosis. This furnishes the most effective weapon in combatting cancer. And, it is chiefly through the energetic support of and cooperation in conduct of cancer educational campaigns that material improvement in the end results can be expected.

If an early diagnosis is made 83% or more of these unfortunates could be cured. As it is statistics selected in large clinics are of interest in this connection. They show that on an average only 17% of all the patients being treated are cured. This proves that 83% are doomed to a cancerous death. Also, that only in a very small percent is an early diagnosis made.

The above statistics are astounding. Nevertheless they are true. We ask why can't these statistics be reversed? In a measure they can by teaching the public the necessity of having an examination once or twice a year, and the examiner being careful and painstaking in his examination. How easy it is for us to see and feel a suspicious lesion and advise the patient to wait for developments.

Procrastination in these cases is more dangerous than the thief at night. Some argue that we are too anxious to operate and many an innocent uterus has been sacrificed. This may be true, but, isn't it better to error on the right side and lose a uterus than have a patient who will gladly welcome death, and eventually make her exit?

Cancer is either going to attack the fundus or cervix. Cancer of the fundus is not as highly malignant as cancer of the cervix. According to Norris, at least 75% of errors in the diagnosis of cancer of the fundus are due to combination of cancer with myoma. Of one hundred and one fundus cases, twenty have been diagnosed clinically as benign; fifty-seven as malignant, and twenty-four as suspicious. In cancer of the body of uterus, about the only appreciable sign is increased size of uterus—best discerned in the standing position. The cervix is negative except for possible bleeding. Carcinoma effects the cervix more often than any other organ. It occurs at any age after puberty; more often

between the 35th and 60th year.

Three varieties are met with. Namely: the pavement cell carcinoma and the ulcerating and infiltrating (nodular) forms of the cylindrical cell carcinoma. The pavement cell variety starts, as a rule, on the vaginal portion and the cylindrical cell within the cervical cavity but, when from laceration, erosion, or other cause, the endo-cervical epithelium becomes squamous or that of the vaginal portion cylindrical, the place of origin may correspondingly change. Cancer of the cervix is highly malignant, and, Mayo says more than 50% of these cases are inoperable, and that an early carcinoma of the cervix is a rare clinical finding.

A bimanual examination alone, no matter how carefully performed, is not sufficient to make a diagnosis. The knee chest position, Sims speculum, and a direct light are most helpful and should be used routinely. I do not believe curettage is permissible in these cases for obtaining a specimen for microscopical study. It may arouse a very dangerous enemy and open up new avenues for the cancer cells. Generally, it is possible to grade cases on the basis of a careful examination of the two groups.

First: Those in which a permanent cure may reasonably be expected. In these the treatment should be vigorous and thorough. If the initial effect is not successful, no amount of subsequent treatment is likely to achieve success.

Second: Those in which a cure is impossible, or unlikely. Here the object must be to obtain the greatest possible degree of improvement. And, this may be accomplished by conservative measures, repeated from time to time according to individual requirement. We have the choice of four weapons to use in destroying and overcoming cancer; namely: Surgery, radium, x-ray and endothermy. In early favorable and borderline cases and where the disease is limited to the fundus, hysterectomy must be regarded as the method of choice with a preoperative procedure of radium. Fifty milligrams of radium in the universal tube applicator placed in the anterior portion of the cervical canal for fourteen hours, repeated four times at intervals of three days, and, followed by total hysterectomy in four weeks from the time of the first application. This seems to be the most effective method. Then within a few weeks, follow with the x-ray. Here owing to the depth of the involved tissues, nothing less than 180 K. V., or better 200 K. V. should be used with a distance of 50 cm. and a 20 cm. x 20 cm. field, filtered through 1 mm. of copper and 1 mm. of aluminum.

The above is an ideal treatment for cancer

*Read before the Kentucky State Medical Association, Frankfort, Ky., September 21-22-23, 1926.

of uterus. I will not mention endothermy, for I have not seen it used, nor has it been used on any of my patients; but, good results are being reported by a number, and no doubt but what it is an effective weapon in a skillful man's hands, and a very dangerous one for the amateur.

I will now take up the treatment of cancer if seen late.

Can much be accomplished? There certainly can.

The following case history will illustrate what can be accomplished by radium and x-ray.

Mrs. P., age 65 years: referred by Dr. Denny of Madison, Indiana. In 1923 she consulted Dr. Cook for constant aching pain in the left sacroiliac region, radiating down the left hip, and could be relieved by aspirin: had burning sensation in the urethra during urination. For a year she had a watery discharge from vagina, tinged with blood. Dr. Cook's diagnosis: carcinoma of cervix, and advised immediate treatment. But a chiropractor promised a cure, and told her that radium either killed or cured. Chiropractor treated her up until August, 1925, when she had a severe hemorrhage. The chiropractor, with all his skill, couldn't stop this hemorrhage, and the family becoming very much alarmed, sent for Dr. Denny. Dr. Denny referred her to me. Examination revealed the cervix replaced by a large, friable, bleeding mass of malignant tissue. The mass was partially fixed in the pelvis by a marked induration, extending to the left pelvic wall. Suffering intense pain had to use morphiae for relief. Owing to her fear of radium, she would not consent to its use, so I gave her the deep x-ray treatment—posteriorly and anteriorly. Hemorrhage, pain, and foul watery discharge disappeared. On July 26, 1926 had a recurrence of pain and gray foul, watery discharge—using 4 or 5 napkins a day; nausea, painful urination and defecation. Examination revealed a friable, bleeding mass of cervix, extending from under the cervix into the broad ligaments, reaching to the walls of the pelvis and immobilizing the uterus. Abdomen very tender and sensitive to pressure of examiner's hand; was using one-half grain of morphiae for relief. July 26th, I used 50 milligrams of radium into the cervix and 50 milligrams against the cervix for 30 hours, thus getting a crossfire of 100 milligrams. Did not see patient any more until August 16th. Pain and foul discharge had disappeared, only slightly staining one napkin a day. Patient feeling fine and has not had to resort to morphiae for relief since application of radium. Cervix looks good, and the mass is disappearing and

seems to be replaced by healthy granulations. August 16th, began the deep x-ray treatment, giving it in divided doses, posteriorly and anteriorly. The relief this patient has received could not have been attained by any other mode of treatment that I am acquainted with, and I am sure that her life has been prolonged, and the rough places in the road she had to travel have been smoothed out.

Some patients are restored to normal health, while others are only partially improved. Unfortunately the improvement is not permanent; it may continue for months, perhaps two or three years. But sooner or later recurrence occurs in the same or some other region, and is usually fatal. The only form of treatment that exerts noteworthy influence on such morbid states, is radiation by means of radium and x-ray, used independently or in combination. Howard A. Kelly treats all his inoperable cases of cancer of cervix with radium. It is here that radium has its greatest field of usefulness, and combining the x-ray a very large dose can be directed at the tumor and the whole pelvis can also be thoroughly radiated. Cancer of the cervix can be benefitted by x-ray alone.

Much pain and suffering can be avoided by the above treatment. Every operator has his favorite technique. The best results are undoubtedly obtained by carefully studying the individual case and applying the technique best suited to the particular symptom found. For some of these cases I use from 50 to 100 milligrams of radium for 25 hours; placing 50 milligrams into the cervix and 50 milligrams held firmly against the cervix—thus giving a crossfire of 100 milligrams; packing the vagina with wet gauze so as to hold the bladder and rectum as far from the radium as possible so they will not be injured.

Follow the above treatment with the deep x-ray. Also each roentgenologist has his favorite technique. Some believe in giving an erythema dose through a 20 cm. x 20 cm. field in one sitting. Others think they get better results by dividing the erythema dose, say one-fourth of an erythema dose for four consecutive days, posteriorly and anteriorly. The amount of roentgen rays that can be given to deep seated tumors is limited to the amount the skin, intestines, and bladder will tolerate. Skin reaction depends upon how the radiation is given. Friction and other kinds of irritation before and after treatment, will tend to increase skin reaction. During the last few years there has been a tendency among radiologists to divide the doses and Drs. Stenstrom and Mattliek of Buffalo, New York, in studying the skin reaction after divided roentgen-ray doses, came

to this conclusion: That 140% of hard radiation divided into four equal portions which were given at about four equal intervals of time, produce the same reaction as 100% given in one day.

Some claim that the x-ray, if given in a small dose, might stimulate the cancer cell and make matters worse instead of better. This is a debatable question. It is a common belief that small doses stimulate; moderate doses damage; large doses kill. Dr. Holzknecht states that small doses do not stimulate. He says not one instance was found in which the growth of carcinoma was increased following exposure to the rays and all comparative attempts at exposing one part of a tumor while shielding another part, were negative, or, showed just the opposite. Plant sprouts which are supposed to grow more rapidly following irradiation, showed on investigation of large numbers, that the weakly irradiated grew just as rapidly as those that were not exposed; and that the strongly exposed grew more slowly.

Cancer of the uterus when seen late, if treated by radium and x-ray will prolong life, and relieve pain and suffering.

Educating the public is the most effective weapon that we have in eradicating cancer and is bound to bear fruit.

DISCUSSION

J. G. Carpenter, Stanford: There is an old saying that it is the early bird that catches the worm, that procrastination is the thief of time, you should not put off until tomorrow what you can do today. The majority of these cases of cancer of the uterus are in the cervix. About eighty-three per cent of them are curable when taken early.

Why do we have so many cancers of the cervix? Because the cervix is so much abused, because it has such a big supply of lymphatics, blood vessels, glands of Naboth, and so on.

It is abused in so many ways, by miscarriages, by labors not properly conducted, sexual excesses, lacerations of the cervix many subinvolution and displacement of womb causes runs back to the obstetrician, the general practitioner who fails to give proper treatment at the right time. There are too many men doing midwifery that cannot sew up a cervix or perineum. A cervix should be sewed up when lacerated unless the patient is so exhausted that you cannot do so without endangering the life of the patient.

I have seen some wonderful and successful surgical results. I have not had any experience with the x-ray or with radium or the physiotherapy treatment, but I do know something of surgery.

I have had cancers of the breast and removed them, that have gone nineteen or twenty-five years without a return. I believe every obstetrician should be a pathologist and should do the

right thing at the right time.

Koch's toxin antitoxin treatment for cancer the American Medical Association condemns, claim is made that seventy per cent of the cases that radium, x-ray, physiotherapy and surgery have failed to cure have been cured by Koch's toxin anti-toxin, and there is a big association of those men composed of 300 reputable doctors who are going to meet in Chicago this fall. I am anxious to know about this latter remedy. If the antitoxin treatment will cure cancer let's stand by it and let's have it. We want to know the truth and the whole truth and treat patients with truth and science.

A. D. Willmoth, Louisville: There are three things that bring the patient to the doctor in cancer of the uterus; first, discharge; second, pain; third, hemorrhage. It is usually the last one that drives the patient in. They don't pay much attention to the first two, but the third symptom brings the patient as a rule to the office of some physician, either the surgeon or the general practitioner, for an examination, and then it is that the true condition is revealed, that of malignancy.

Unfortunately over ten per cent of these cases that present themselves are already inoperable. What we mean by that is if we could see inside of the abdomen and knew exactly what the condition was that was present, we wouldn't operate because they are too far advanced, nothing can be done.

Ten per cent of them in the best of hands will have a death rate following an operation, with an attempt to remove the remote pathology that is present here, which means the entire cleaning out of the pelvis if you are going to do surgery; otherwise it is not necessary to attempt it.

After all, surgery of cancers of the uterus is about as dark a page as we have in all medical history. If you will follow your cases through, there are very few of them that live any great length of time from surgery alone. Therefore, we must do something to enhance the effect that we get from surgery, whatever the character of your surgery is. We have turned to x-rays and we have turned to radium and we have turned to endothermy or electrocoagulation as the essayist said.

Certain it is that x-ray and radium have afforded a great deal of help; not the help that we expected to get, not the results that we expected to get.

Why? Because there are four characters of carcinoma. You remember the classifications laid down by Francis Carter Wood.

Anything will relieve the first class of patient. The other two are fairly easy to attack, and the fourth class you can't do anything for, it makes no difference how early you have the case. The very moment the local condition is present, you have already a systemic effect and it makes no difference whether you use x-ray or radium

or surgery or endothermy or what not, you are going to have a mortality.

You remember in the section on pathology in Chicago at the American Medical, the symposium on cancer in which the long list of lantern slides was shown and his experimental work on rats and the effect of the x-ray, in which he proved that the bold stroke of a tremendous dose did not influence the pathological condition present, and he showed a number of slides to prove this. I regret to have to take some issue with the essayist, and that is that he proved that the 200,000-volt machine was no more effective than was 140 or 150 thousand. That has been the consensus of opinion of many today. You all recall the work that has been done by a little woman of London, by Rigaud of Paris, and many men, who have rather reverted from the 200,000-volt machine because of the danger that is present, the burning of the intestine, the suspension of the liver cells, the suspension of the adrenals, and the fibrosis that takes place.

It is a dangerous thing and it is hard to tell just what you are going to get with it.

Radium in small doses frequently repeated is much better than in large doses. That has been conclusively proven.

The most important thing is the destruction of the cell. Endothermy is the only thing that will destroy it. Much credit is due to Percy who has persistently brought the attention of the profession to the application of heat. The only difference between the method of Percy and the endothermy as referred to by the essayist was that in his method he depended upon a hot iron to give up its heat to the tissue. Of course it got cooler all the time. It was impossible to keep the temperature what you wanted. In endothermy, with a high frequency current properly controlled, with an electrode properly placed, the tissues generate their own heat and there is no trouble to get all the heat you want. For five or six years I have not operated upon a case of cancer with a knife and a pair of scissors, because I could take electrocoagulation and with a little time destroy the uterus just as effectively as I could do it with a knife and a pair of scissors and much wider because of the dissemination of the heat above 140 degrees Fahrenheit which is all that is necessary to kill a carcinoma cell. You have no mortality, a short stay in the hospital, a week or ten days at most, you reverse the lymph stream, you get a wide dissemination of the heat, and last and by no means least is to treat the patient afterwards. You are going to let the patient go back home and eat the same things, do the same things, and carry with her in her body the same chemistry that she had that produced the irritation to the cell that caused its rapid proliferation to start with.

Treat the patient.

Irvin Abell, Louisville: I regret I cannot discuss the paper because I did not hear it. I did hear Dr. Carpenter ask about Koen's cancer cure.

It was my pleasure last week to attend the meeting of the Michigan State Medical Society at Lansing. While there I took advantage of the opportunity to ask something about Koen and his cancer cure. It seems that Koch himself is a graduate of a reputable school and for years engaged in legitimate practice of medicine. But ordinarily a man is known by the company that he keeps, and if you will take a list of the names of those associated with Koch in his cancer foundation, you will find them to represent the various "isms" and "apathies" and what not, men and women who for years and years have been publicly engaged and known to be engaged in the exploitation of various types of quack treatments. In a statement of the committee of the Wayne County Medical Society who investigated Koen and his method, they state that Koch himself might be a misguided, honest individual, but as much cannot be said for those associated with him in this particular enterprise. The Wayne County Medical Society has given Koch every opportunity to confirm his claims and so far he has failed to substantiate to their satisfaction a single one of that number. It is pointed out that those who through their efforts have discovered things that have been of value to humanity have without exception been real true doctors in that they have given such to their profession without a question of compensation. Here comes a man who does not tell you the character or contents of what he proposes to use as a cure for cancer, who has perfected an organization on a commercial scale requiring membership fee of \$100 for each physician in that organization, who specifies that you are to charge \$300 for your first treatment of every cancer patient, and \$200 for each subsequent treatment. Did you ever know of a Kentucky doctor doing anything of that kind? Did you ever know of any reputable doctor, scientist, in the history of medicine, who through his efforts was able to produce something that was of benefit to humanity who did a similar thing?

As a result of that investigation and these facts I have mentioned to you, and they are facts that are published by the Michigan State Medical Society, they have unqualifiedly condemned Koch and his methods and his associates.

D. Y. Keith, Louisville: I know some men in Detroit very well who are of the same opinion that Dr. Abell has stated. There is one case in New Albany, Indiana that was treated. The patient went to Detroit for treatment and died

within a short while.

To further verify what Dr. Abell has said, do any of you present know of a case that has been treated by the Koch method and cured? That is another thing that would substantiate what Dr. Abell has had to say. As far as I have been able to learn from doctors I know as well as I know any man present, in Detroit where the Wayne County Medical Society is situated, he is considered a quack there and has been given every opportunity to administer his treatment under supervision of the Cancer Committee of this County society, and they have even offered to supply the patient and the beds in the hospital if he would conduct his treatment. He has failed show up on every case.

As to the treatment of carcinoma of the cervix, the essayist brought out the essential points. As to his saying that eighty-seven per cent of patients can be cured of carcinoma of the cervix, that is a much higher percentage than anyone I know of has accomplished. That may be true if you get the patients early enough.

In the early patients we feel quite sure that the diagnosis should be made first, and in the patient that is approaching the menopause, if you are going to use radium, (which we think preferable to operation with or without radium) before surgery, be sure that it is applied in the cervical canal. If this is done and your operation done within three or four weeks afterwards, in other words, at the time your cell is sickest, in which it will have the least possibility of transplanting, and that is the thing that cures the patient, be sure your radium is inside the cervical canal and not out in the vaginal mucosa. Your surgeon will have a much more difficult operation if the radium has been applied to the vaginal mucosa which causes a fibrosis making the closure of the vagina more difficult in complete hysterectomy.

Outside of the early cases we feel sure that radium and heat are the best methods that we have at the present time.

We are sure on a great many of them heat first is preferable to radium. On a great many we treat with radium alone.

As to the question Dr. Daugherty brought up a little bit ago, possibly a great many of you read a recent article in the A. M. A., I think two weeks ago, by Dr. Francis Carter Wood on the treatment of malignancy with colloidal lead. I heard Dr. Wood's discussion on this at the Pathological Section of the A. M. A. last year and talked with him personally and have kept in close touch with Dr. Bell's work at Liverpool, who is the man who has given this treatment and who started it some six or seven years ago. This report that Dr. Bell gave out was his first report and was made in 1922, in which he had treated fifty-seven patients. Out of that number he had ten, I think, who had been well for a period of

one to three years. Strange to say, the first patient he treated, who was a pregnant woman with a carcinoma of the breast, with metastasis that had been seen by three of the most prominent surgeons in Liverpool, gave birth to a child later and nursed it out of the breast that had been ulcerated by malignancy. He shows pictures of the patient, the pathological section, and the condition afterwards. Up to date in the report that Dr. Wood gives out Bell has treated between 250 and 260 patients. Out of that number he has had fifty-five patients that are well from a period of one to five years. Mind you, the cases he has treated have been the hopeless ones, cases which have been turned down by every other man, and it seems there is a step forward in the treatment with lead.

Dr. Bell is primarily a gynecologist. He learned that cases of miscarriage were coming in from lead workers, in other words, the breathing of lead and absorption of lead through the skin would cause a miscarriage. He began the treatment of colloidal lead and his idea is to give a toxic dose to the malignant cell without causing death to the patient. He is sure on some of his patients he has caused death from lead poisoning, and he has proven also by autopsy and by microscopical section of tissue that there is a greater percentage of lead in the malignant cell than in any other portion of the body even including the brain tissue or spinal cord, the colloidal lead combining chemically with the lecithin in the cancer cell. Lecithin is more abundant in the cancer cell than any normal cell, even including the brain.

From the information that I have Dr. Bell has been criticized a great deal because he has not given his information to the profession. He has been careful in his selection in that the patient doesn't have any kidney lesion. It is not the fact that Dr. Bell is trying to make any money out of this, because he is at the present time on a salary of \$100 a year with the Liverpool Cancer Committee and all the fees he gets since he began this have been contributed to the clinic. There is no criticism. There is no secrecy either about his preparation. The lead is being prepared and he gets his colloidal lead formed by an electric spark. It is very difficult to make without being very toxic and does not keep over two or three days' time. It must be used while fresh, preferably within 3 or 4 hours after its manufacture.

Allen Donaldson, Carrollton (in closing): Unfortunately a tumor which is responsive can in no pathological anatomic sense be distinguished from one which is unresponsive. The macroscopic and microscopic findings in two tumors may be identical. Nor does the clinical picture offer

any assistance. From the standpoint of radiation therapy, malignant tumors may be highly radiosensitive, slightly radiosensitive and radio-resistant.

Dr. Willmoth thinks that 200 kilo-volts is too much. I don't think that if he was going to do a laparotomy he would put a two-ounce pressure on the scapel. With 140 kilo-volts or less, it is almost impossible to reach deep structures. You would only be getting about a tenth per cent dose into the uterus with 140 kilo-volts, maybe not that much, and would have to resort to cross fire technique, which would take too long a time.

In operating, he wouldn't like to have his patient on the table a long time; same with roentgenologists. So why not use 200 kilo-volts?

No one realizes the danger of x-ray more than I do. It has made an indelible impression upon me. It is an instrument that a man should not think of trying to use unless he has had some training with it.

THE EVOLUTION OF PREVENTIVE MEDICINE.*

By J. S. CHAMBER, Lexington.

INTRODUCTION

The first problem encountered in the consideration of this subject is not to find material for discussion but to select from the abundance of material just sufficient of the most important topics for the space and time allotted. It will be necessary to confine this paper to a consideration of some of the more important ground breaking discoveries which have opened up and developed into the present field of preventive medicine.

No field of human endeavor has contributed more to the sum total of human happiness than has preventive medicine. In no field has progress been attended with more brilliant ground breaking discoveries. No discoveries have been attended with a more beautiful spirit of service to mankind. When we see this kind of spirit we know that medicine is not yet commercialized. The personal sacrifice, the spirit of public service, and the tireless efforts which have ever attended progress in this field oftentimes have touched on the romantic.

THE GERM THEORY.

Preventive medicine became a branch of medicine when the so called "germ theory" ceased to be a theory and was accepted as a scientific truth. The "germ theory" of disease had been advanced at intervals for many centuries before it was accepted. It was thought about and philosophized about by an occasional genius but was beyond proof until the experimental method came into use. The

masses looked upon disease as a visitation, either divine or of the evil spirit, or as due to seasonal miasms or related to the position of the heavenly bodies.

Microbes were not known to exist until the latter part of the 17th century when Van Leeuwenhoek, a Dutch lens maker and scientist first described them. For almost two centuries then they were looked upon somewhat as curiosities and their relation to disease while oftentimes suspected did not take form until the middle of the 19th century, when Pollender, a village physician on the Rhine, saw through a compound microscope the anthrax bacillus in the blood of an animal sick with that disease. For the next decade or two evidence began to accumulate that microbes were in some way associated with disease and in the late sixties and early seventies, Pasteur, by means of exact scientific experimentation and after many bitter attacks by the medical profession and science generally, was able to prove the causal relationship of bacteria to infectious diseases. An incident will illustrate the medical thought of the period and Pasteur's relation to it. At a meeting of the academy of medicine a doctor was discussing an epidemic of puerperal sepsis at one of the lying in hospitals. He was attributing the epidemic to the seasonal miasms and at the close of the discussion said in a jesting manner "perhaps one of M. Pasteur's germs have had something to do with it," whereupon Pasteur went to the blackboard and drew a likeness of a chain of streptococci, saying: "there it is."

Time and space forbid the enumeration of all the brilliant work done during the period from 1870 until Pasteur's death in 1895, but suffice it to say his experimental methods were adopted by workers everywhere and the causative microbe of one infectious disease after another was discovered and its life history worked out, thus establishing firmly the "germ theory" as a scientific truth.

SPONTANEOUS GENERATION.

Another theory, a running mate to the "germ theory," was the theory of "spontaneous generation." After the discovery of bacteria for over a century they were looked upon as the beginnings of life. It was somewhat of a sport of the scientist to prepare different kinds of infusions and let them stand undisturbed until they were teeming with bacteria. It was thought they originated spontaneously in the infusion. There were even formula for making frogs. This theory was the subject of mild controversy among scientists and philosophers until Pasteur set about to study bacteria, the role they play in nature and their distribution. He first demonstrated that if an infusion and its contain-

*Read before the Kentucky State Medical Association.

er are free from bacteria and properly protected from them they will not develop spontaneously in the infusion. He then demonstrated the presence of bacteria in air, water and soil and finally lived to see demonstrated the important role they play not only in nature and industry but in medicine. The importance of the final destruction of this theory of spontaneous generation cannot be overestimated for preventive medicine and especially epidemiology could never have developed under the influence of such a trend of thought.

ANTISEPTIC SURGERY.

Among the first fruits of bacteriology was antiseptic surgery, which was a forerunner of aseptic surgery. The antiseptic technique was developed by Lister following Pasteur's demonstration of the almost ubiquitous distribution of bacteria, even in the air. The following letter from Lister to Pasteur, dated 2-15-1874, shows something of the origin of antiseptic surgery:

My dear Sir:—

Allow me to beg your acceptance of a pamphlet which I send by the same post, containing an account of some investigations into the subject which you have done so much to elucidate, the germ theory of fermentative changes. I flatter myself that you may read with some interest what I have written on the organism which you were the first to describe in your "memoir on lactic acid fermentation."

I do not know whether the records of British surgery ever meet your eye. If so, you will have seen from time to time notices of the antiseptic system of treatment which I have been laboring for the last nine years to bring to perfection.

Allow me to take this opportunity to tender you my most cordial thanks for having by your brilliant researches, demonstrated to me the truth of the germ theory of putrefaction, and thus furnished me with the principle upon which alone the antiseptic system can be carried out. Should you at any time visit Edinburgh it would I believe, give you sincere gratification to see at our hospital how largely mankind is being benefitted by your labors.

I need hardly add that it would afford me the highest gratification to show you how greatly surgery is indebted to you.

Forgive the freedom with which a common love of science inspires me, and

Believe me, with profound respect

Yours very sincerely,

Joseph Lister.

The antiseptic spray for the air of the operating room, the rendering antiseptic of everything exposed to the air even the opera-

tive field or wound was the overdevelopment of the idea which eventually swung back to aseptic surgery.

Surgery has grown from a procedure of last resort largely in case of injury, such as compound fractures and in amputations to its present status within the last 50 years.

Antisepsis and asepsis have removed from childbirth the hazards of 50 years ago, especially in the case of lying in hospitals. And all these things were made possible in surgery by the practice of a phase of preventive medicine.

IMMUNITY.

Man has probably always observed that he will have certain diseases only once. That fact, one of the earliest observations in medicine, has been the basis of much thought and work and while many things have been learned about it, it still remains one of the mysteries of medicine. Smallpox was one of the diseases of which this observation was made and inoculation with smallpox material under favorable conditions, was practiced for many centuries to get the advantage of immunity with the least possible danger. Inoculation, however, was attended with some danger of severe or even fatal cases occasionally occurring and the practice would spring up and thrive at intervals then die down until 1796 when Jenner introduced inoculation with cowpox. He made the observation that individuals who had had cowpox were immune to smallpox. He vaccinated a boy with cowpox, then six weeks later inoculated him with smallpox without effect, demonstrating an acquired immunity. The vaccination with cowpox was milder than the old method of smallpox inoculation and the practice came into more general use. Jenner's observations great as they were failed to recognize cowpox as an attenuated smallpox, but he did recognize the fact that a valuable smallpox immunity could be had at the small expense of a mild cowpox sore.

Pasteur was the first to make a comprehensive study of immunity. He recognized different kinds of immunity and classified them. He demonstrated a natural immunity of different animal species to different diseases, the chicken does not have anthrax and he wondered why. He chilled a hen in a cold bath then successfully inoculated with anthrax, demonstrating that the natural immunity in that case was due to the warm blooded characteristic of fowl. He recognized that one acquired immunity by having a certain disease, but he did not understand why an attack of cowpox should protect from smallpox. He later, by accident, produced such an artificially acquired immunity, in chickens, to infection with the bacillus of

chicken cholera. It occurred in this way: he was working with chicken cholera when the work was interrupted and several flasks of broth cultures of the organism were set aside for several weeks. He again took up the work and found his old cultures would not sicken chickens. A freshly isolated culture was then tried on the same chickens with the same result. The fresh cultures were then tried on fresh chickens which sickened and died. Pasteur immediately saw that he had immunized the first lot of chickens with the old attenuated cultures so that virulent cultures would not effect them. This was the first recognition of the principle of producing acquired immunity artificially by means of attenuated avirulent organisms and Pasteur then recognized that vaccine virus was in fact smallpox virus attenuated by passage through the cow. It later developed that dead organisms were effective immunizing agents and this type of vaccine has largely supplanted the attenuated living vaccine.

As other infectious diseases come to be explained it was found that in certain diseases, as Diphtheria, soluble toxin liberated by the bacteria, rather than the bacteria themselves plays a leading role in the disease. Sewell had already immunized pigeons to snake venom and Ehrlich had immunized guinea pigs to the vegetable poisons, abrin, ricin and robin. Von Behring then immunized rabbits to diphtheria toxin. Roux and Yersin transferred this immunity contained in the serum to other animals and found it was effective. They then developed on a large scale which was later commercialized, a method of producing the diphtheria immune serum from the horse. These workers announced the production of curative diphtheria antitoxin at the International Congress of Hygiene at Vienna in 1895. The enthusiasm ran so high at the conclusion of Dr. Roux's paper that dignified doctors and staid professors stood on the seats and threw their hats into the air so great was the joy that a cure for diphtheria had been found. This principle of antitoxic immunity has now been developed in other infectious diseases, the latest of which are the infections due to the streptococcus groups, especially scarlet fever and measles.

SANITATION.

It is estimated that less than two-fifths of the people of the earth live under modern sanitary conditions and this two-fifths only attained present standards within the last few years. It is interesting to note however that two of the most important phases of sanitation, water purification and sewage disposal had their origin before preventive medicine became an organized field. Water carriage

of sewage developed more as a convenience than as a means of preventing disease. Water carriage of sewage was begun in London in 1815, it was sanctioned by the city council in 1844 and was required by law in 1847. The first water carriage in Boston was in 1833 and it was not sanctioned by the city until 1875. There was no water carriage in Paris until 1880. A sewage system was designed and installation begun in Chicago in 1855. The sewage system of Baltimore is now only a few years old. Now it is estimated that the average town when it reaches a population of 3000 installs a sewage system and the rural and village residents are rapidly installing private water and sewage systems.

Until recent years it was the practice and considered sufficient to carry the sewage only to the nearest stream where it was emptied, without thought of the next town below. With the increase of population and the advance of preventive medicine it was realized that streams and inland waters would eventually reach their limit as a safe means of sewage disposal, that is the great lakes have practically doubled their chloride content in the last 25 years due to the addition of sewage. There originated then the practice of sewage treatment before releasing it into streams. This practice has developed into a very highly efficient system which has for its basis sedimentation and digestion with separation of solids and aeration and oxidation of the liquid or soluble content and final chlorination before release.

The general practice of pollution of natural waters has made necessary the purification of these waters before use for drinking purposes. The first step in modern water purification was the building of a slow sand filter by James Simpson in 1829 at the Chelsea Water Co., London. This is now known as the English or rapid sand filter, or is sometimes called the biologic filter since its efficiency depends on the formation of a gelatinous layer of biologic life over the surface of the filter. In 1884 Hyatt and Leeds built a rapid or American sand filter at Sumnerville, N. J. In this filter, sometimes called also the mechanical filter, they used a coagulant which serves the same purpose as the gelatinous biologic coating of the slow sand filter.

The original purpose of water filtration was primarily the removal of bacteria as well as the removal of solids or mud. The chief function of filtration now is the removal of dirt from the water rendering it clear and clean while the destruction of bacteria is now accomplished by chlorination.

Water purification and sewage disposal are the outstanding accomplishments in sanitation.

tion but there has developed among the public a greater sense of cleanliness which has expressed itself in many ways, such as systems of garbage and waste collection and disposal, street cleaning, cleanliness of public buildings and especially places where food is handled or served.

FOODS AND NUTRITION.

Food may be concerned in the causation of disease in two principle ways, namely by containing bacteria or their products capable of causing disease, and by being deficient in some of the properties essential to health. After the germ theory was established it was soon recognized that the microbes of infectious diseases may gain entrance into the body through food. This was first proven in the case of food poisoning due to Gaertner's bacillus, and later to botulinus and others. It was soon recognized then that especially the gastrointestinal group of diseases such as typhoid, cholera and dysentery and also scarlet fever, measles and diphtheria and others may be contracted through food.

For a great many centuries scurvy and beriberi have been recognized as disease entities which appeared among sailors, armies, prisoners and the inhabitants of besieged towns. From time to time other diseases have been classed in this group until now there is quite a formidable array of diseases classed as deficiency diseases. The development of our knowledge of this group of diseases may be said to have passed through three distinct stages. These stages may be called the era of empiricism, the era of organic chemistry and the era of biochemistry. It was common knowledge among sailors that scurvy developed on long voyages and cleared up when port was reached and fresh food, especially the citrus fruits, was available. Likewise beriberi has long been associated with the too exclusive eating of rice. The lay group involved by these diseases observed these things probably more than did the doctors until Lind of Holland made some observations on these diseases and their treatment and prevention. Lind recognized scurvy and beriberi as being due to a deficient diet and recommended a more varied diet for their cure and prevention. Following Lind's observations, British sailors were supplied with antiscorbutics when going on a long voyage. The treatment and prevention at this time was entirely empiric.

The era of organic chemistry looked upon foods as consisting entirely of the five food principles, protein, fat, carbohydrate, water and minerals. The metabolism of these principles was studied and this line of development was looked to for a complete explanation of nutrition. The chemist often used the illustration "of fuel for the engine", but when

he made up the synthetic diet it would not work, "the engine" would not run. He did not have the spark to ignite the fuel.

The era of biochemistry recognized the necessity for the spark to ignite the fuel and in 1906 Hopkins admitted the necessity for "accessory food factors" not included in any of the five food principles. This era takes into consideration not only the five food principles but also the six types of foods, namely, meat, milk, eggs, fruits, grain and vegetables. It seems to be as necessary to balance the diet properly with the six types of food as to balance the protein, fat, carbohydrate, water and mineral. Lack of any one of these accessory factors or vitamins is now known to result in a fairly definite symptom complex, but there are no ventures as to what vitamins actually are or how they act.

PRESENT TREND IN PREVENTIVE MEDICINE.

It may not be amiss after tracing the development of some of the different phases of preventive medicine to appraise our present status and point out some trends of thought indicating the course in the future.

It may be said that the first step—discovery of the causative agent—has been pretty well taken for the infectious diseases as a group. The second step—specific prevention—has not progressed nearly so far but with scarlet fever and measles recently coming into the group with diphtheria, typhoid, cholera, smallpox, rabies, tetanus, anthrax and whooping cough and with much promising work now being done on the streptococcus group progress may be said to be satisfactory.

The most promising recent discovery in preventive medicine is deHerrelle's lytic principle or bacteriophage. The bacteriophage is a principle (be it a chemical, an enzyme or a living organism) which propagates itself through cultures of bacteria not only killing the bacteria but dissolving their body cells. This discovery has been said by many to be the most promising piece of work since the establishment of the germ theory.

Sanitation has concerned itself largely with sewage disposal, water purification and the disposal of waste. It is now being appreciated that sanitation goes further than that. For example, in congested communities it may be suggested that there is a community saliva spread on the streets, sidewalks, floors, door knobs, counters and desks which dries and becomes community dust flying in the community air. Might the laws of personal hygiene be, to an extent, applied to community hygiene?

The science of nutrition is as yet undeveloped. There are a group of diseases including scurvy, beriberi, rickets, toxic goiter, keratomalacia and polyneuritis that are

known to be due to a deficient diet. There is another group including trachoma, pernicious anaemia, diabetes and cancer which from time to time has been attributed to a deficient diet. It has been suggested that the great increase of gastrointestinal disease noted among the civilized races everywhere can be attributed to highly refined foods or that civilization is living off the grocery shelf instead of the farm and garden. McCarison found a carcinoma of the stomach of one of his native monkeys who had been long on a vitamin B deficient diet. It has been pointed out that native Africans have no cancer until they begin eating from a British mining commissary when they have cancer of the same rate as the British. It has further been suggested that endocrine imbalance may in many cases, be due to deficient diet.

ELECTRO THERAPEUTICS.*

By S. S. AMERSON, Georgetown.

Many of the greatest thinkers of the world concur in the thought that God works through nature, and through his instrument, man.

Man looks for his haven above, yet it may be beneath his feet, in embryo, rough and misshapen as it were, but nevertheless emerging from the warp and woof of human thoughts, a better, brighter world. For the law of humanity is the law of progress. Thousands of years have made no improvement in the bee hive, the house of beavers, or the nest of birds; but look at the habitations and achievements of man. Humanity moves forward to what, no one knows; man looks forward to as Tennyson says:

One God, one law, one element,

And one far off divine event

To which the whole creation moves.

Looking back through the years we see man is conquering misery and poverty and sickness; he is making the world a better place in which to live. He has accomplished many stupendous things; he is destined to accomplish many more as he learns to note, observe, think and apply.

God works through man, whom he teaches in the bitter school of experience when he refuses to learn otherwise. Nature does not scatter her golden gifts to lazy pets and luxurious darlings, but imposes tasks when she presents opportunities, and uplifts him whom she would inform. Watt observed the steam lift the lid of the fireside kettle from the clue thus given we have railroads, steamships and factories run by elemental forces that each in its turn frees thousands of enslaved muscles. The world went without these things until one man saw, thought and applied.

Some improvements are forced upon us through pressure of affliction. In the middle ages plagues devastated London; in those same Middle Ages the illustrious Cromwell said, "Trust God, but keep your powder dry." There was no tinge of irreverence beclouded his thought; he only taught a great truth. God will not do for us what we can do for ourselves. He never has and never will. Man may pray for help and it will never come till he helps himself. Many prayers have been answered only by careful thought and action,—a miracle of hygiene.

Dr. Albert C. Geyser says: Medicine is fast ceasing to be an art it is approaching the scientific stage. The rule of thumb and tradition has served a noble purpose, but is now a dead letter, and positive science has taken its place. We must revere and respect, but we must no longer be satisfied with the crude methods which were sufficient for our forefathers. Empiric medicine is a thing of the past, and science must take its place.

If we pause a while on some of the terms of Dr. Geyser we will realize his meaning more clearly. What does the term art and science and empiric mean? Let us consult standard authority as we would on surgery or medicine.

Knowledge of a single fact, not known as related to any other, or of many facts not known as having any mutual relations or as comprehended under any general law, does not reach the meaning of science. Science is knowledge reduced to law and embodied in system. Art always relates to something to be done. Science to something to be known. Science, as in the case of chemistry or electricity, is urged on to higher development by the demands of the art, while the art is perfected by the advance of the science. Science is the sum of universal knowledge as opposed to empirical, which means reliance on individual experience.

As the greater contains the less, so must the sum of universal knowledge be greater than that of individual experience. There is legions of therapeutics. If one single measure could accomplish half what is claimed for it there would be no more disease, every germ would be destroyed and the millennium here. So far there is no pathy, no rule by which disease can be annihilated. This means if we cling to any one method or pathy in medicine and exclude all others we are wrong, that is empirical. We should use all legitimate means and scientific knowledge to cure the patient.

In this endeavor electricity has been found to be a therapeutic agent of great value. Some, because they cannot get at a logical explanation of basic principles responsible

*Read before the Scott County Medical Society.

for the effect seen in the use of this agent, they condemn it. The accuracy or otherwise of the conclusions arrived at we will leave to the individual judgment of the trained professional reader nevertheless the fact remains that whether the basic cause has been rightly or otherwise interpreted, the effect of the agent is to cure, in many cases where all else failed. Results demand investigation and application. Results are practical and unanswerable. Electricity may be an unknown agent as regards its constituency or elements, but we may know how to apply it and get the results. Its good effect in positive cures where all else was useless should guide us. Influenced by undoubted results, unquestioned demonstrations, unassailable facts presented by so many worthy men, how can we be doubting Thomases. It is conceded God works through nature and his instrument, man, then it will be conceded that the physician carries a high and noble responsibility in the fact that he ministers to God, and his efforts are daily devoted toward eliminating friction and disease from the physical body of the image of our maker.

No matter what we use, there are certain principles involved in the cure of any and all maladies. Heat and light have long been known to affect the human system as nothing else does, and are essential in health as well as disease. Were this not so why the statement, "Let there be light and there was light." We all know what that light was and with it came heat, and in that light and heat is the course of the ultra-violet ray. Without this light we could do nothing. The spectrum of light in the sun's rays can be and has been shown to have the violet ray. When intensified as in the present method of use it is more commandable and ever at hand, intensified for use. For at least thirty years or more, till recently, electricity and electrotherapy in this country was little thought of as a therapeutic agent but in Europe it was not so. With Tesla and D'Arsonval originated the high frequency current, so high it seems incredible, into quadrillions per second. It takes over 450 trillions oscillations per second to produce the violet ray, and at 750 trillions it goes out to a white ray so white you cannot look at it. When the violet ray is produced all shock is gone and only heat and light left. As heat and light are germicidal, so in this ray we have one of the most powerful and best germicides. It will penetrate deeper and do less harm to the tissue than any germicide known. The high frequency current affects by thermal heat and light and causes vaso-dilations, vasomotor ac-

tivities and vaso-constrictions, followed by vaso-dilations thereby increasing blood supply to the diseased area, aiding nature in the repair of said injuries or disease. Repeated demonstrations have positively shown the lessening of the action of bacteria in so many and varied cases, it can no longer be doubted that it actually kills them. High frequency currents relieve pain, as neuritis, rheumatism, sprains, bruises, headache, toothache, and in fact all I have known it tried on.

All high frequency machines of today are made up of either the Tesla, D'Arsonval, or a combination of both, with the Oudin resonator. You should always know if you have the D'Arsonval or Tesla type, as there is much difference in the amperage and voltage. Either must oscillate over 450 trillion times per second to produce the ultra-violet ray. The Oudin current energizes vacuum electrodes, the spray electrodes, the static spark electrodes, the ozone inhaler, the fulgeration spark. The D'Arsonval or Tesla solenoid is utilized for auto-conduction, auto-condensation and diathermy. With these I have for some time successfully treated conditions and maladies hitherto I could do but little for.

Case No. 1. Mrs. N. on Dec. 9, 1924, came to me after consulting several doctors and surgeons. He is 15 years old. History good. Right leg from hip joint down affected. Leg from 3-4 to one inch smaller than the other. Slight tenderness on outer border of patella. Hip joint would crack on elevation of knee. When walking at times the leg would give way and let him fall. Diagnosis: What is often called hip joint disease. I treated him less than four months and he is sound and active, making a hand on the farm since the last of May.

Case No. 2. Mrs. M., age 48, housewife. Previous history good except has been deaf in one ear since a child. Had suffered with rheumatism in right heel for 8 years, had spent over \$800 in treating it, no relief. On January 19, 1923, treatment was begun and on February she was dismissed and has never felt any discomfort since.

Case No. 3., Mrs. B., 68 years old. History of ankle ulcer for more than 20 years. Some months ago the inflammation spread to top of foot and up leg to the knee. She was and had been for a time on crutches. Suffered all the time, more especially at night. I treated from the Oudin post with the vacuum electrode, then with the auto-condensation for the blood and general system and in eight weeks she was dismissed cured. This was a case of Osteomyelitis.

Case No. 4. Mrs. J., age 52, history good. September 11, 1923, brought me three x-ray

plates of left knee, which plainly showed osteomyelitis of fibula at lower margin of patella, where surgery could not be done without opening the joint. This knee was two and one-half inches more in circumference than the other. Very painful and tender. With the aid of block tin I attached one pole of the diatherma below and one above the knee, sending the current through bone as well as muscle, heating it so it was unpleasant to handle it. Treatment from 10 to 15 minutes every other day from September to November, 1923, and dismissed her cured and she has never had any more trouble. Diagnosis, osteomyelitis.

Case 5, Mrs. A. Had first lower right molar drawn in 1917 and it left the jaw affected, which discharged pus all the time, purely a case of osteomyelitis. June 4, 1923, I began treating her with Oudin in vacuum electrode in mouth against jaw and then external. She did not come regular and took longer. On September 25, she was dismissed cured and has had no trouble since.

Case No. 6, Mrs. C. On May 16, 1925 came in with a case of erysipelas over left eye so close it would have invaded the eyes and entire face as the eye will not tolerate antiseptics strong enough to kill the streptococcus germs. I applied the ultra-violet ray from the Oudin current to the eyes with the eye electrode and to the face with the body electrode and in two days dismissed her cured.

This is only a few of the many cases I have treated with the high frequency current in the past few years I have been using it. But enough to show the variety of diseases that can be and are being cured with it.

I never dress a wound without first cleansing it with high frequency electricity and since taking up this procedure I have not had a septic case. And if a case of sepsis comes to me I at once treat it with the violet ray, and so far have had phenomenal results.

One thing you will encounter when you install this electricity, is the enmity of all the radio fans. When this machine is in operation all radios in a large circumference around it go dead. As the static electricity from the ultra violet ray machine, put in the air is too great for radiology.

Uric Acid Showers.—According to Beer, if, in patients in whom the roentgen ray, cystoscopic and pyelographic studies have been negative, and who complain of typical ureter or kidney pain, the urine on standing precipitates uric acid crystals, there is some connection between this phenomenon and the syndrome of which the patient complains. The change of diet to a low protein diet will almost immediately control the symptoms.

PENETRATING WOUNDS OF THE ABDOMEN.*

By JAMES A. RYAN, Covington.

Penetrating wounds of the abdomen may be roughly classed as stab wounds, gun-shot wounds and impaling wounds.

Impaling wounds are usually caused by falls upon stakes, sharp stumps or other upright sharp pointed objects. The abdominal wall is not often penetrated by such accidents. These injuries usually involve the perineum with consequent damage to the rectum, urethra or bladder and in females the peritoneal cavity is sometimes penetrated per vaginam.

The locations of the wound, its extent, the bloody urine, shock, rigid abdominal muscles, rectal or vaginal, examination will determine whether or not the peritoneal cavity or a viscus has been punctured. When any doubt exists as to penetration of the abdomen an immediate section should be done.

Stab wounds are less serious in the upper than in the lower abdomen. A great many stab wounds only involve the abdominal wall and even in cases where the peritoneum is opened the underlying viscera escapes injury.

In the small puncture wound with evidence of shock and haemorrhage, a rigid abdominal wall and dullness in the flanks, indicating the escape of stomach and abdominal contents or the presence of free blood, an immediate intestinal section must be made. Waiting for blood in the vomitus or in the stool is a dangerous practice as these will only appear some hours after injury.

The prognosis of penetrating wounds is greatly influenced by the time which elapse between injury and operative interference. Siegel in reporting 700 cases of penetrating wounds of abdomen had a mortality of 15% in cases operated under four hours and 90% in cases operated over twelve hours following injury.

Various statistics show that the liver, small intestine, diaphragm, stomach and spleen were injured in the above order of frequency. In my own experience the stomach and liver have been the most frequently injured. If one could definitely know that only the liver were wounded, I do not believe operation is indicated, for as a rule bleeding from the liver has a tendency to control itself. However, the amount of shock and the general symptoms of haemorrhage would have to govern ones decision whether or not to operate.

By far the greatest number of penetrating injuries of the abdomen are caused by gun-shot wounds. They probably constitute about

*Read before the Campbell-Kenton Medical Society.

90% of all the cases seen.

However innocent appearing and however small, and no matter what the location of the wound of entry, great care and discrimination must be exercised in these cases. I know of no condition where one's surgical judgment is so taxed; as procrastinating for a few hours will often destroy whatever chance for life that an immediate operation might offer. A few hours make a great difference in the prognosis in cases of ruptured viscera, with accompanying haemorrhage and extravasation of contents into the peritoneal cavity; for haemorrhage and peritonitis are the causes of all fatalities.

The path of a bullet through the abdominal cavity may be erratic and cannot be judged by its path of entry through the abdominal wall. In the last month, we had a case of a small boy who reached up to a shelf and pulled down his father's revolver, and in doing so the gun was discharged. The boy was brought into the hospital in shock. The point of entry of the bullet was just below the twelfth rib, slightly to the left of the medium line. We noticed while preparing him for operation what appeared to be a deep contusion in the right inguinal region.

An upper mid line incision was made with escape of air, blood and stomach contents. The anterior wall of the stomach was perforated, the bullet traveling downward perforating the stomach through the greater curvature and a through and through perforation of the transverse colon; so destroying the gut and mesentery that it was necessary to resect about four feet of the ileum. The bullet ranging downward and to the right went out of the peritoneal cavity just to the inside of the external iliac, at about the Internal Ring, went through Poupart's Ligament above Femoral vessels, and ranged downward and outward through the thigh and presented under the skin just overlying the external condyle of right femur.

Another case in which the point of entry was in the right gluteal fold, the bullet ranged upward into the abdominal cavity and produced multiple perforations of the intestines. This man was in extreme collapse when he reached the table; when the abdomen was opened, the cavity was full of blood and he very promptly died on the table, so that the complete path of the bullet and the damage it had done was not traced.

The point that I am trying to make is that no matter where the point of entry, if there are any abdominal symptoms, and sometimes the only symptoms present will be a general tenseness of the abdominal wall, an immediate exploratory operation is indicated.

Repairs of gastric and intestinal wounds

by suture if possible is indicated. Sometimes when the in and out wounds in the small guts are directly opposite or where the laceration is severe, or where the mesenteric blood supply is destroyed, it will be necessary to do a resection with the speediest technique possible. When one of the above conditions exist I have found it wise to explore the gut in both directions for the nature and extent of further damage. In this way, by resecting a larger area of howel we oftentimes avoid the necessity of doing a second or third resection.

Wounds of the solid viscera may be sutured, but usually, packing suffices. Depending upon the extent of damage, they sometimes will have to be resected either in whole or in part. Wounds of the bladder require suture, with suprapubic or catheter drainage.

It is safer to drain an abdomen after perforating wounds, as the amount of infection carried by the bullet and by the escape of visceral contents cannot be estimated.

FOCAL INFECTION IN ITS RELATION TO SYSTEMATIC DISEASES.*

By A. D. DONNELLY, Bowling Green.

A focus of infection is a circumscribed area which is infected, ordinarily, by a low grade of bacteria. This infection is usually hidden and causes little or no pain, but these same hidden infections are now known to be responsible for a long list of systemic diseases, a few of which are, several forms of heart disease, nephritis, renal calculi, vesical calculi, rheumatism, herpes zoster, and in all probability, appendicitis and gastric ulcers, etc. May says: "Investigation has proved that those who suffer from such diseases carry a focus, that with varying degrees of health, exhaustion, or even climatic changes may afford an opportunity for the bacteria to be thrown into the blood stream and create a recurrence of those diseases, which in the past were treated as entities, primary, not secondary, as we now consider them."

The relation of foci of infection to systemic diseases is no longer a matter for question and debate; it is now an established fact. For a number of years such men as E. C. Rosenow, Charles H. Mayo, W. W. Duke, Frank Billings, W. A. Price, J. G. Meissner and others have been working on a theory that bacteria have a selective tendency and are inclined to localize in certain tissues of the body. By means of experiments, long continued and many times repeated, it has been proved that animals injected with bacteria taken from around infected teeth develop lesions, similar to those of the patient; that is, a disease is produced in the animal

*Read before the Third District Medical Society at Mammoth Cave.

similar to that with which the patient is suffering.

The diseases mentioned previously in this paper; that is, heart disease, nephritis, etc., are a few of those which animal experimentation has proved can be traced to dental foci of infection. In some of these diseases specific localization followed direct intravenous injection of the bacteria obtained from the pus expressed from infected tonsils or aspirated from the depth of the pyorrheal pockets. It was not always necessary to give intravenous injections to reproduce in animals the diseases from which the patient was suffering. Introduction of the bacteria in suitable dosage into the peritoneal cavity, the trachea, the brain, stomach or into the nasal cavity, by packing the nose with gauze soaked in cultures, was followed by specific localization in special instances.*

The locating of foci of infection is a very difficult matter and sometimes it is almost impossible to accomplish. For this reason it is necessary in tracing the cause of the diseases named as well as the many others for which focal infection is responsible, for the patient to have a thorough examination; not only by the interne, but the dentist and throat specialist as well. Such examination can not be considered thorough from a dental standpoint, until both the upper and lower jaw-bone have been completely x-rayed, even though all the teeth were extracted twenty or thirty years previously. Any part of the root which has been left in the jaw is always infected, even though it has long since been enclosed in the bone. This infective focus will remain in the bone until surgically removed.

All infected foci are not found in the teeth and jaw-bone as has been known for a long time, the tonsils are very often centers of infection for since there is no partition between the mouth and throat and since tonsils are located in the pharynx they very often become diseased, because of the unhealthy condition of the oral cavity.

But since it is true that by far the larger percentage of focal infections is found in and around the teeth, the laity has gotten the erroneous idea that these organs are the only source of infection. Hence, when some one has his infected teeth extracted and then fails to obtain relief from his ailment, the whole theory of focal infection is discredited, so far as that particular person is concerned; it is impossible to persuade him to search for another focus, and the result is premature death. The truth of the matter is, that it is not only possible for one to have more than

one focus, but it very often so occurs, when there are two, if only one is removed, the other seems to become stronger.

Diseases that are caused by focal infection can not be cured until the focus has been completely eradicated. Sometimes if this is delayed too long the tissue that is infected from the focus may remain infected permanently. If for instance, a person consults his physician as soon as he has his first systematic disease, and has the focus, or the foci of infection removed, his recovery will be rapid and complete; but if he waits several weeks or months, his condition may by this time have become chronic, and while the progress of the disease may be checked, no complete cure can be obtained by the removal of the focus. It does not always so happen, but as a rule, after the removal of a focus of infection, the constitutional symptoms are more severe. This is the so-called reaction, and if it occurs at all, it is from twenty-four hours to three days after the operation. It is caused by turning into the blood stream more bacteria than have been entering it; in other words, the surgical removal of the focus breaks down Nature's quarantine against the bacteria and they are thrown into the blood stream faster than the white blood corpuscles can handle them.

When the constitutional symptoms are very grave, the condition of the patient rather serious, and there are several infected teeth to be removed, it is advisable to take them out one or two at a time with intervals of three or four days between. If all the bacteria from these infective foci are turned into the system at one time, the patient may be overwhelmed by them; whereas the gradual removal of the teeth and the interval of rest gives Nature an opportunity to build up a resistance sufficient to overcome this amount of toxic matter.

Abscess of the Frontal Lobe from Focal Infection of the Face.—Mathieu and Peron describe two cases of abscess of the frontal lobe following infection of the face or forehead. In one instance, the origin of the infection was a wound in the upper internal angle of the orbit from a blow. The patient developed cerebral symptoms about the twentieth day after the accident. No trace of a scar could be found on examination. In the other instance, the abscess followed a suppurative osteitis of the frontal bone, apparently of syphilitic origin. The usual syndrome of abscess of the brain was incomplete in both patients. The diagnosis was suggested largely by the history in one, by the scar in the other, and confirmed by necropsy and operation, respectively.

* E. C. Rosenow, Experimental and Clinical Studies on Focal Infection," The Journal of the American Dental Association, October 1924, page 965.

PROSTATECTOMY, PRE OPERATIVE
AND POST-OPERATIVE CARE.*

By E. W. NORTHCUTT, Covington.

Prostatectomy is a comparatively simple and easy operation. It is the removal of the prostate gland, usually adenomatous which by its enlargement has produced an obstruction to the free outflow of urine. Why then has this operation been looked upon as being an unusually risky one? It is because of the pre-operative and post-operative complications. These patients are usually old men whose physical condition is already below par. Many are cardio-renal cases. Their average age is over 60 years.

The pre-operative care begins with a careful and most thorough history and physical examination. The history should inquire into the man's way of living, his habits and especially as regards his genito-urinary organs during the last four or five years. The physical examination should be made with special reference to the heart and blood vessels, to the lungs and kidneys. Remember there is no such thing as an emergency prostatectomy. Even in acute retention the careful passing of a catheter or if this cannot be done suprapubic drainage will relieve the situation and allow the patient to improve while he is being studied. In emptying the bladder it should be done gradually—never all at one sitting or several ounces at a time, as this will cause an immediate lowering of intravesical tension with a resulting oedema. This may result in a urinary suppression. The Van Zwalwenburg method of gradually emptying the bladder is simple and satisfactory. In this method the urethral catheter is attached to a long rubber tube filled with water which empties into an elevated receptacle the height of which is determined by the pressure within the bladder. When drainage of the bladder is started the patient should be given large amounts of fluids by mouth, proctoclysis and if necessary by infusion. There should be an output of at least 2500 cc. daily. An accurate record should be kept of intake and output. A record of the blood pressure should also be kept—this usually falls with emptying of the bladder but rises again with forced liquids and attention to the heart itself: the pressure should be taken often. Bladder drainage should be continued until the urine is relatively clear of infection and the urea content of the blood is within safe limits. This may take a long time but it is necessary if a high mortality is to be avoided.

The causes of death of prostatic cases are those complicating conditions which the patient has when he comes for treatment such

as,—cardio-renal, pulmonary and diabetes; those complicating the operation itself—hemorrhage, shock and anesthetics and those following the operation—infection, embolism and pulmonary complications. If these complications are kept constantly in mind in the pre-operative and post-operative care of these cases many fatalities can be prevented. Cystoscopy should be avoided unless there is a distinct indications for it as—when symptoms are out of proportion to the size of the prostate as sometimes happens in enlargement of the median lobe.

Sometimes in long standing cases the bladder will be irregular in outline or there will be diverticula containing infected urine. Cystogram will show these diverticula or stones if present and, rectal examination will give quite satisfactory information as to size, shape and consistency of the gland.

Renal function should be determined by the phenolsulphonaphthalein test. This should be repeated until it comes within safe limits. The normal average is 50 to 60 per cent for the first hour and 25 to 30 per cent for the second. The amount of residual urine should be ascertained and repeated urinalyses made until the infection is reduced to a level of safety. Eighty to ninety per cent of these cases will be found to be infected. A preliminary treatment by stock vaccines seems to be of great benefit in some cases.

More important than the renal function test by phthalein is the blood chemistry. This shows not what is being eliminated through the kidneys, but what is being retained in the patient's blood, which is probably the best indication of his condition and of his ability to stand an operation.

Occasionally a patient will register as a poor risk by the phthalein test, while blood examination will show him to be a comparatively safe risk, the urea content, uric acid, etc., being fairly within safe limits. In other words, it is not what is being eliminated, so much as what is being retained in his blood that we are greatest concerned about and this can be quite accurately estimated now. Drugs are sometimes indicated and should be given accordingly.

The post-operative treatment will vary somewhat, depending upon the type of operation done and the individual operator. Altogether it would seem the less done the better, so far as the bladder is concerned. If a Pileher bag is put in at the time of the operation, there should be little danger of bleeding.

Attention should now be turned to the general care of the patient. He should be given plenty of liquids by mouth as soon as he will retain them and by rectum subcutaneously or

*Read before the Campbell-Kenton Medical Society, November 4, 1926.

intravenously as may be necessary. He must not be allowed to wear himself out with restless nights. If drugs are necessary for rest they should be given—trional or veronal. Ipral, (calcium-ethylisopropylbarbiturate) is a new preparation and is practically non-toxic. It produces a restful sleep. Morphine should be avoided if possible.

Until the patient is allowed to sit up, which is usually on the second or third day, his position should be changed frequently and he should be kept warm as these old men are prone to develop pneumonia—one of the chief causes of fatality. While it is not wise to get them out of bed before the blood pressure and heart examination shows it to be safe they should not be kept in bed a day longer than is necessary. They must have wholesome and nourishing food and every detail carried out that will make for a brief and certain convalescence.

CONCLUSION.

I. The operation itself in these cases is the smallest part of the treatment. The most important part is pre-operative care, the next is post-operative care.

II. If the mortality in prostatism is to be reduced to a minimum every patient must be studied individually, use must be made of every available procedure that will help to ascertain his exact physical condition and all the facts obtained must be intelligently correlated.

III. In the post-operative treatment his condition must be frequently checked with the laboratory, but he should not be treated as a machine. It should always be borne in mind that we are treating a machine more complicated, more delicate and more sensitive than any man has ever made; and that, in addition to all the refinements of the laboratory and mechanical devices some human touch and good common sense are necessary.

Influence of Insulin on Biliary Secretion.—Nitescu's experiments were conducted on dogs. Injections of insulin notably increased the secretion of bile after ingestion of milk. The secretion was highest at the third hour, decreasing gradually to normal by about the fifth hour. Injection of insulin was without effect if it was preceded by that of atropine. Further research may determine whether the cholagogue action of insulin occurs through the instrumentality of nervous fibers or of body fluids.

ENCEPHALITIS FOLLOWING SLIGHT INJURY. CASE REPORT.*

By MORRIS FLEXNER, Louisville.

The patient presented herself for examination on September 22nd, 1926, with the following history:

On August 24th, Dr. S. Weinberg had removed her tonsils, convalescence not unusual. On September 18th, she had received a blow on the back from an irate old man. She localized the injury in her upper dorsal region and said that at the time the pain had been great enough to make her cry. Her mother stated that she had complained of the pain that day and the two following days. On the third day after the blow she complained of stiffness in her neck and held her head definitely to the left side and said that her back still hurt her.

The next day she was brought to our office where she showed the following:

Child is underdeveloped, undernourished. Poor color, skin clear. Posture is peculiar, head is drawn over to the left side, left shoulder is two inches lower than the right shoulder with a marked spasm of the trapezius muscles on both sides. Child's speech is somewhat muffled owing to the fact that a definite trismus is present, being able to separate her teeth about one inch. Masseter muscles on both sides are spastic. Eyes: pupils react to light, extra-ocular movements normal, no nystagmus. Teeth in fair condition. Tonsillar fossae not easily seen because of the trismus.

Chest: Lungs show asthmatic bronchitis present on both sides. Numerous rales on inspiration and expiration. Heart, no enlargement, sounds of good quality at apex and base. Regular rate and rhythm, no murmur.

Abdomen: no rigidity of muscles, abdomen flat, no masses or tenderness, neither liver nor spleen felt.

Reflexes upper extremities active, slightly increased; both K. K. increased; suggestive patellar colonus, not sustained; no ankle colonus; no Babinski; no Kernig. Abdominal reflexes a little inconstant, at times all four present, occasionally one or two absent.

Laboratory findings: Blood count, haemoglobin, 88%, red blood cells, 3,510,000; white blood cells, 9,400. Polymorphonuclears 62%. lymphocytes, 32%, eosinophiles 1%, basophiles 1%. Urinalysis: specific gravity, 1032, reaction, acid. No sugar and no albumen. Microscopic squamous epithelial cells, two plus, 6-8 pus cells H. P. F. Occasional round epithelial cell, occasional scale of pus. Bacteria, one plus.

Progress: Child was sent home and put to

*Read before the Louisville Medico-Chirurgical Society.

bed where her condition gradually became worse. The bronchitis and cough were severe and because of the trismus the patient was unable to take sufficient food. Temperature varied between normal and 100 degrees F.

On September 23rd, the patient first said that at times she saw double. This was tested and found to be true. This phenomenon persisted off and on during the course of the disease. At no time did she complain of headache. On two occasions Dr. W. E. Gardner saw her in consultation. Because of a suspicion of encephalitis 15 c.c. of 5% mercurochrome were given. This was followed by a severe temperature reaction. Eye grounds at this time were negative.

A slight grade of episthotonus developed and a positive Kernig. On the 25th of September a lumbar puncture was done which showed the spinal fluid to be under increased tension. Examination of the spinal fluid was as follows:

Pandy's, one plus; Ross Jones, one plus; cell count, 15. No film formation. Spinal fluid sugar, 105 milligrams per 100 c. c. The condition became more grave. The child had her first convulsion the night of September 26, and had five or six throughout the next day, increasing in severity. She died during one of these the night of September 27, 9 days after her injury.

The question of diagnosis is of interest. We all felt the child probably had epidemic encephalitis, the double vision and the spinal fluid findings being the two principal factors in favor of this opinion. The muscle spasms and convulsions are unusual although they do occur. As to whether the blow had anything to do with this or not is speculative. There have been many cases described and we have seen two other cases of epidemic encephalitis following an injury.

Unfortunately no autopsy was permitted.

DISCUSSION

W. E. Gardner: The case reported by Dr. Flexner is of much interest, and the preponderance of evidence is in favor of encephalitis. There have been many cases reported following injuries. Also the question of tonsillectomy performed a month before must be considered, inasmuch as it might have released organisms already resident in the tissues of that area. The injury possibly may have lowered the resistance of the patient to some extent, and this with the reaction dependent upon the injury may have rendered the child more susceptible to infection by organisms already resident in the brain tissues. How much influence the tonsillectomy had in relighting infection about the nose and throat it is difficult to say. The organisms responsible for the production of encephalitis seem

to have their habitat in that area. Tuberculous meningitis and brain abscess must be considered, still the cell count was against tuberculous meningitis and the absence of choked disc would seem to exclude brain abscess. The leucocyte count of 9,000 probably increased later. With the spinal fluid findings and the spastic condition of the back muscles along with the fever and diplopia I would conclude that it must be encephalitis. The question of tetanus seems to be excluded by the history.

John J. Moren: I have seen several cases of encephalitis following slight injuries. I recall a boy who received a blow on the head during a holdup in Chicago, he was not seriously injured, but following this he developed typical manifestations of encephalitis. A man was in an explosion of some kind and was struck in the back. He developed typical encephalitis and had Parkinsonian manifestations.

I have seen several patients who had encephalitis following injuries where the question of compensation had to be considered. This has been such a common experience with me that I conferred with the compensation board at Frankfort, but nothing could be done. It seems they have ruled that injury had nothing to do with precipitating the encephalitis, that the germ was there already, and maybe the patient would have had the disease anyhow.

I recall one man from Owensboro who had the choreic form of encephalitis following an injury. Various injuries and shocks have been frequent exciting causes in the cases I have seen.

L. Wallace Frank: The case reported by Dr. Flexner is very interesting to me. There is one point I wish to particularly mention. Matas some years ago in the study of tetanus showed very conclusively that certain individuals are tetanus carriers and that one can have tetanus without any definite break in the skin surface and the introduction of microorganisms. Two or three years ago we saw a case in which tetanus developed postoperatively and the patient died. After development of symptoms and while she could still talk she stated that following a minor operation of some kind two years previously she had a similar attack with trismus and spastic symptoms which lasted six days and then subsided. The child mentioned by Dr. Flexner may have had the same thing. Whether it is typical encephalitis or not I do not know, but I have never seen encephalitis with trismus. The possibility of the child being a tetanus carrier should not be disregarded. A patient with tetanus may have almost any symptom of involvement of the central nervous system.

David Cohen: I treated the child mentioned by Dr. Flexner for five months before she died. She had chorea that followed a rather definite pneumonia. She had typical lobar pneumonia followed by resolution. She had blood in her

sputum for several weeks after recovering from the pneumonia. Whether this has any bearing on the condition which later developed I do not know. She developed a very severe chorea, and the last time I saw her she still had it.

Morris Flexner (in closing): I do not believe the child died of tetanus. In spite of the fact that there were many convulsions and opisthotonus, at no time was there any rigidity of the abdominal muscles.

The question of both the tonsillectomy and the injury is of interest. I have seen one case of encephalitis develop immediately after a tonsillectomy but here it was a question as to whether the tonsils were removed during the incubation period of the disease. I have also seen one case develop within a few days after a blow on the head. Recently I saw a compensation case in consultation in which a laborer working on a railroad attempted to pull a spike. The spike "came up" much easier than he anticipated and he fell backward jerking his head severely but not injuring it. That night he felt dizzy and the next day he ran a low fever and later developed double vision and other symptoms of encephalitis.

In this case report I believe encephalitis was probably precipitated by the injury the child received. Cases of epidemic meningitis have been reported following blows on the head in children. Whether she would have developed encephalitis in a month or six months without the injury no one can say. However, the blow might have lowered the local resistance enough to have invited the invasion of the infection.

Influence of Extracts of Embryos or Regenerated Skin on Healing of Wounds.—In the treatment of rebelling wounds Carnot and Terris used powder or extract prepared from embryos or from the skin over healed wounds which had been produced on the shaved back of rabbits. In the case of a large burn, application of the embryo powder resulted in complete healing in less than a month, after all usual measures had failed. Dressings with glycerol extract of regenerated skin, incorporated in agar gelatin, were applied to a trophic ulcer in the scar of an old burn, various other dressings, used for two months, had been without avail. Another trophic ulcer (in a favus scar) healed after four or five dressings with a similar extract. A large varicose ulcer was entirely cured in five weeks with these dressings, applied at intervals of three days. No internal remedies or immobilization were added to the treatment.

LOBAR PNEUMONIA. A CONSIDERATION OF SPECIFIC TREATMENT.*

By VIRGIL E. SIMPSON, Louisville.

The mortality of pneumonia is definitely affected by a number of factors—previous attacks, age, race, sex, complications, association with other diseases and variations in dominance of different types of pneumococci. This fact is well known but often overlooked in studying the statistics of this disease with a view of comparing the results of one line of treatment with another. It makes a study of specific therapy in acute Lobar Pneumonia as difficult and subject to erroneous conclusions as has obtained with the older therapeutic measures.

An added difficulty to such a study arises from the multiplicity of organisms capable of causing pneumonia including the most common casual organism, the pneumococcus, which presents several types.

A comparison of the percentage of cases resultant from the different organisms capable of causing pulmonary consolidation and the relation of these organisms to mortality is necessary for an intelligent study of specific therapy.

The table of Avery, Chickering, Cole and Dochez (1) may be accepted as fairly accurately showing the incidence of pneumonia due to pneumococcal types.

Table 1.

Pneumococcus Type	Incidence
1	33%
2	34%
3	13%
IV	20%

Types 1 and 2 are responsible for two-thirds of all cases of pneumonia while type 3 is a relatively infrequent cause. These facts together with the heterogeneous nature of type IV are of importance therapeutically.

TABLE 2

The relation of the type to mortality is shown in table 2.

Pneumococcus Type	Mortality
1	30%
2	32%
3	50%
IV	16%

Type 3 causes only 13% of pneumonias due to pneumococci but its mortality rate is the highest of all the types.

These tables can be best understood in the light of the mortality of large series of cases from all causes. (2)

*Read before the Jefferson County Medical Society.

TABLE 3.	
All causative Bacteria	Mortality
Cases	
233,730	18%
465,400	20%

The virulence of all types of pneumococci varies remarkably in different epidemics and the virulency for lower animals is not an absolute index to that for man. Of equal importance is the resisting power of the individual as is evidenced by healthy carriers.

PATHOGENESIS.

Whether pneumonia is caused by the germs reaching the lungs by the aerogenous, hematogenous or lymphogenous route is yet a mooted question. That a bacteremia exists in a large majority of cases has been demonstrated by blood culture studies. Blood cultures may be positive before clinical evidences of pneumonia are discoverable. Primary pneumococcal invasion of other organs than the lungs, as the brain or peritoneum, do occasionally occur.

SPECIFIC THERAPY.

With this brief survey of factors having a bearing on the incidence and mortality of pneumonia the specific treatment problem may be more intelligently considered.

PNEUMOCOCCIC SERUM.

Therapeutic Sera may be divided into two groups, antitoxic and bacteriolytic. If pneumococic serum be really a therapeutic agent is it antitoxic or bacteriolytic? A study of the phenomena associated with cases terminating favorably by crisis under routine care has shed some light on the subject. The crisis is not due to anatomic changes in the affected lung, neither is it the result of an abrupt loss of virulency of the pneumococcus. As the crisis is approached the intensity of the blood stream invasion is reduced as shown by the reduction in positive blood cultures and even the number of viable germs obtained by lung puncture is reduced to or near zero, with or following the crisis, these findings have been confirmed experimentally in animals (4) (5).

The explanations in the literature of these facts are, however, contradictory.

Clough (6) thinks that the only anti bodies found in the blood following the crisis are those that promote phagocytosis. He succeeded in showing that serum from the patient or animal obtained after the crisis produced active phagocytosis of the coccus; he also demonstrated that this phagocytosis was a specific one protecting experimental animals against inoculation of the homologous strain only. Since these anti bodies resist heating to 56 degrees C. and persist in the serum in vitro he concluded they were bacteriophins.

Other observers have suggested that hypersensitiveness to the pneumococic protein ex-

plains the phenomena. This explanation rests on fairly tenable ground since many of the manifestations of the disease resemble allergic states. The abrupt onset of the disease, its intra-alveolar localization and the exudative character of the local process strongly resemble experimental infection in sensitized animals.

None of the explanations thus far offered appear wholly satisfying and it is suggested that a wholly new type of reaction phenomenon may yet be found to be responsible for the rather unique clinical termination of favorable cases of pneumonia.

Bacteriacidal antibodies have been attributed by some students of the problem as the responsible agency for recovery but while their substances are found to be more abundant in the serum of convalescent pneumonia they do not afford any increased protection.

Since pneumonia may be caused by anyone of a number of organisms and since specificity is a fundamental characteristic of antibody formation it follows that the identification of the kind of germ implicated in a given case must be a *sine quo non* for specific therapy. This means typing. After typing has been done a serum must be selected manufactured from the corresponding type. Not all types are equally amenable to serum therapy.

Pasteur observed that animals could be immunized against pathogenic germs; Frankel (7) showed that an antiserum established a passive protection against pneumonia but that it was not antitoxic; the Klemperers (8) back in 1891 were the first to use a serum in the treatment of pneumonia to which the German group, Romer, Pane, Neufeld and Handel made clarifying contributions; finally Newfeld and Handel during the period from 1902 to 1912 devised methods for standardization of a serum and established the claim for specific antigenic properties of the several types of the pneumococci. Subsequent study has led to the production of a serum having a fair potency against type 1, some against type 2 and that, so far, no serum has been produced that is even reasonably effective against types 3 and 4.

The mortality rate from infections by type 1 has been reduced from about 30% to 8% by the use of serum. Type 3 presents an incidence of only 13% but a mortality of 50%, a rate uninfluenced by serum therapy. The lowest mortality is caused by type 4, being only about 16% though causing one-fifth of all cases. Serum for this type affords no protection against development nor has it affected the mortality rate the slightest.

Since about one-third of all pneumonias are due to type 1 some clinicians advise the giving of type 1 serum to every case. Where typing can be done patients should not be subjected to such rule of thumb procedure

since it entails useless expense, may establish a sensitization making the administration of other needed sera at a later date more hazardous to say nothing of bringing specific treatment into disrepute.

DOSAGE:—Most biologic houses have adopted the Rockefeller Institute standard of potency for type I serum. By this standard a mouse weighing 20 gm. which would be killed by 0.000001 C.C. of the pneumococcus culture is protected against 0. C.C. of the culture by 0.2 C.C. of the serum. An initial dose for the human is from 50 to 100 C.C. and should be repeated every eight hours until the crisis is past. The average case will require from 250 to 300 C.C.

Administration:—The serum should be given intravenously. It should be heated to 100 degrees F. before it is injected. This may be easily accomplished by immersing the container in water at a temperature of 150 degrees F. The rubber covers should then be sterilized with alcohol before the needle is introduced through them into the container. Most manufacturers supply the serum in glass containers with needle which when assembled constitutes a syringe ready for use.

The median basilic or cephalic vein is the vessel of election. The skin should be cleansed with soap and water, rinsed, painted with iodine and washed with alcohol before introduction of the needle. Another satisfactory method of skin preparation is painting with liquid phenol and washing at once with alcohol. The phenol not only sterilizes but anesthetizes the skin making the introduction of the needle less painful.

Construction of the vein in the proximal side makes it stand out prominently, therefore easier of puncture. A tourniquet, rubber tubing or bandage may be used for this purpose. A more preferable method than either of these is the ordinary blood pressure cuff; determine the systolic and diastolic reading and then raise the pressure to a point midway between these two. This technique compresses the vein but allows free flow of arterial blood into the extremity and hence better distension of the vein to be punctured. After the needle is introduced into the vein the pressure by the cuff should be released and the serum allowed to flow in by gravity or pressure from the bulb or piston. The flow should not exceed a rate of 1 c.c. per minute for the first 10 c. c. after which it may be introduced more rapidly if no symptoms appear.

Testing For Sensitization:—0.5 C.C. of the serum should be injected subcutaneously two hours before the first intravenous dose is given. If no evidence of anaphylaxis appear by the end of that time the intravenous injection may be given. This test is not necessary for

the succeeding doses.

Results: 1. Defervescence of the temperature usually follows the first days treatment. In some of the cases the temperature continues at or near the level established before the injections and falls by crisis much after the fashion of cases not treated with serum. The course of the disease is generally shortened, and the severity of the symptoms lessened. In the majority of the cases seen by the writer a chill occurred in an hour or two after injection followed by a profuse sweat and a rapid subsidence of symptoms, to reappear to a less degree before the second dose was given. Delayed resolution, abscess and empyema occur as frequently in treated as in untreated cases. Complications incident to blood stream infections are less likely to occur. The course of the disease is shortened and mortality is lowered.

Pneumococcus Vaccine: Vaccines have been extensively used in the treatment of a number of acute diseases including typhoid fever, streptococcal infections and pneumonia. The writer has elsewhere repeatedly stated that, in his judgment, the use of vaccines in acute processes is not warranted by the facts at hand. There is already a struggling existence between the reparative forces of the body on the one hand and the invading organism on the other. Fever is the clinical evidence of the reaction of the cells to the insult. The very definite localization of the pathology in pneumonia is an evidence of the successful establishment of immunizing agencies. The rapidity with which a patient passes from a state of grave danger to a convalescent state argues the development of antibodies though yet of an unidentified character. This fact coupled with the fairly successful development of these bodies in a healthy individual by vaccines made from strains I and II as a prophylactic measure has given apparent warrant for their therapeutic use. Chickering's (9) statement that the efficacy of the procedure intended to establish active immunization in an acute, short-lived disease, so characteristic of pneumonia, finds little experimental support, draws my unqualified approval. From a clinical standpoint the pneumonic patient would appear already overloaded with antigenic substances and the addition of more, even though dead, antigens (bacteria) has never impressed me as sound. Certainly if one must use a vaccine two things should be kept in mind. First, the vaccine should contain pneumococci of the same type as exists in the patient for specificity obtains as surely in vaccine as in serum therapy, and second, the vaccine should be made from partly autolyzed bacteria (10). By the former at least a gesture is made in the direction of accredited facts and by the other less insult is

offered to an already sufficiently afflicted victim.

Leucocyte Extract: The important role of phagocytosis in combatting many diseases producing organisms led Hiss and Zinsser to conduct experimental studies on various transmissible diseases and in 1913 the former (12) published a report of a series of pneumonias treated with the extract having a mortality of 5%. Greater comfort to the patient, beneficial effect on the circulation, an increased leucocytosis, an earlier crisis and a speedier convalescence were claimed. Floyd and Lucas (13) were equally sanguine and the succeeding literature contained many favorable reports but it can not be said that the agent had enjoyed anything approaching a wide application. My experience has justified at least an open mind. It can certainly be stated that further careful study is needed before it can be classed as a real specific. It is preferable to two vaccines in cases where it is impossible to type the organism and in those due to type 3 and 4 where serum is useless. The usual dose is 10 cc. given subcutaneously twice daily.

Chemical Agents—Morgenroth (14) having determined that a number of derivatives of cinchona had a definite influence on trypanosomes experimented with these agents on the pneumococci because of certain characteristics possessed in common with the trypanosome group. Ethylhydrocuprein or optochin was found to possess some actual bactericidal effect in vitro and this action is about equal against all types. Moore (15) found the blood serum of man became bactericidal for pneumococci when the drug was used either orally or subcutaneously in single dosage of 0.5 gram, about 0.4 grain (0.026 gram) per kilo body weight is required to render the blood bactericidal. It may be given in 2-3 gr. (0.15 gram) doses every three hours. The drug is highly toxic affecting particularly the special senses and its toxic dose is too near its therapeutic dose for it to be considered a very safe agent.

Numoquin is the new name for Optochin. It is marketed in two forms, Numoquin Base and Numoquin Hydrochloride. The former is a bitter, white powder, sparingly soluble in water but fairly soluble in fats, is a stable product and keeps with no deterioration; the latter is freely soluble in water and is used only for topical applications as in the treatment of *Ulcus Serpens Cornea*.

Numoquin Base is given in 4 grain (0.25 gram) doses every 5 hours during the entire 24 hours for 2 to 3 days. 150 cc. of milk is given with each dose to lessen the rapidity of conversion into the hydrochloride and no other food, even water, is allowed during the

2 or 3 day period of dosage. Its manufacturers claim it is so specific in its action that it may serve as a diagnostic test for pneumococcus pneumonia and rather naively states that "failure to obtain results at the end of 3 days is due either to the disease not being of pneumococcal origin, or to the treatment having been begun too late!"

Another biochemical gem is found in their literature containing the statement that "If the pneumococci are exposed to concentrations of the drug not sufficient to promptly kill them they may become resistant or 'fast' to the drug!" and finally in a burst of paternalistic benignancy one reads "in small children unable to call attention to failing vision and other symptoms characteristic of over dosage the physician or nurse should be watchful!"

The way of the doctor who gets his therapeutic knowledge from the "literature" of the manufacturing pharmacists is thus made easy.

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THE FORUM.

To the Editor:

Permit me to extend to you and to the Council and through you to the "Editors" of the "Womans Auxiliary Number, Kentucky Medical Journal" my congratulations and felicitations.

This number, the December issue, was a most remarkable and commendable effort upon the part of the "Doctors' Ladies" and marks an epoch in medicine and medical journalism. I trust that your office sent a copy to every Doctor in the State as it should be read not only by the Doctor but by his better half.

The articles are every one of the highest character, inspirational in the ideas advanced as well as practical.

The "Auxiliary" movement having had its beginning at Crab Orchard under my regime as President of the State Medical Association, my excessive pride in its development

and in this evidence of earnestness of purpose of our Kentucky Doctors' wives is I am sure pardonable: at the same time I feel that I am expressing the feeling of every member of our Association.

May the good work grow and may we each be stimulated to better efforts by the incentive of our good women.

Yours very truly,

LOUIS FRANK.

Kentucky State Medical Association.

BOOK REVIEWS

SURGERY OF NEOPLASTIC DISEASES.

By Electrothermic Methods. By George A. Wyeth, M. D., New York. Foreword by Howard A. Kelly, M. D., Baltimore. 8Vo, cloth 316 pages, 137 illustrations, \$7.50 net. Paul B. Hoeber, Inc. Publishers of The American Journal of Roentgenology and Radium Therapy, Annals of Medical History, Annals of Roentgenology, The American Journal of Surgery, etc. 67-69 East 59th Street, New York City.

Dr. Kelly in his Foreword says, "Dr. Wyeth has developed an instrument by which we can rapidly secure electro dissipation and electro coagulation of the tissues with a cold needle and without carbonization. If knowledge of these methods described by Dr. Wyeth could become universal and this subject more thoroughly studied a forward step would be made in treating unoperable cases. The book is well written and amply illustrated and well worth the price quoted.

LECTURES ON HEREDITY. A series of lectures given at the Mayo Foundation and the Universities of Wisconsin, Minnesota, Nebraska, Iowa, and Washington (St. Louis) 1923-24. 12mo 250 pages, illustrated. Philadelphia and London: W. B. Saunders, 1925. Cloth, \$2.50 net.

These lectures on Heredity were given during the year 1923-1924 under the auspices of the Mayo Foundation and the local chapter of the Sigma Chi at Rochester, Minnesota and other educational centers. In this volume are included comprehensible language a fair conspectus of our present knowledge concerning heredity.

THE HUMAN BODY. By Marie Carmichael Stopes, Doctor of Science, London; Doctor of Philosophy, Munich, Fellow of University College London; Fellow of the Royal Society of Literature and the Linnean and Geological Societies, London; President of the Society C. B. C. and Racial Progress, with 53 illustrations and colored plates. G. P. Putnam's Sons, New York and London, The Knickerbocker Press, Price \$2.50.

ELECTROTHERMIC METHODS (Desiccation and Coagulation) In The Treatment of Neoplastic Diseases. Designed as a Practical Handbook of Surgical Electrotherapy for the Use of Practitioners and Students. By J. Douglas Morgan, B. A., M. D. Formerly Radiologist, Ross Pavilion, Royal Victoria Hospital, Montreal; Instructor in Radiology, University of Pennsylvania Graduate School of Medicine, Philadelphia, Pa.; Assistant Radiologist, Philadelphia General Hospital Member of the Roentgen Society, London, England; Member of the British Institute of Radiology; Fellow of the Royal Society of Medicine, London, England; Member of the American Roentgen Ray Society, Member of the American Radium Society; Fellow of the American Academy of Physiotherapy, Etc. Illustrated with 36 line and half-tone engravings. Philadelphia: F. A. Davis Company, Publishers. Price \$2.50.

The object of this book is to supply to the medical profession, in general, a statement of the value of the electrothermic methods a short account of the means by which desiccation and coagulation are produced and the manner of their application. While the medical profession have been slow in recognizing the value of electrothermic methods we feel it is due to the meager teaching in medical schools and also to the dearth of authentic literature which this volume will in a measure correct.

PARENTHOOD AND THE NEWER PSYCHOLOGY. Being the Application of Old Principles in a New Guise to the Problems of Parents with Their Children. By Frank Howard Richardson, A. B., M. D. Author of "Simplifying Motherhood," "Malnutrition of the Child," etc. G. P. Putnam's Sons, New York, London. The Knickerbocker Press.

Dr. Richardson is a practising physician, and he writes in much the same way that he would talk with his patients in the consulting room. In non-technical language, he presents his facts and his advice with conciseness and lucidity. He maintains that the first necessary step in helping modern parents to deal with modern children is the re-education of the parents themselves; and he approaches his task from this fundamental viewpoint. Without over emphasizing the importance of sex, he has not neglected this difficult factor in the life of the child. Above all, he leaves his readers with the conviction that it is advisable and really easy to apply the teachings of modern psychology to juvenile problems.

WOMAN'S AUXILIARY NOTES

Russell County Organizes.

A report just received from Russell County announces the organization of the Woman's Auxiliary, Russell County Medical Society at a meeting held February 18, 1927.

The following officers were elected for the ensuing year:

President....Mrs. Ada Tartar, Russell Springs
1st Vice-President-Mrs. M. M. Lawrence, Rowena
2nd Vice-President-Mrs. J. S. Rowe, Jamestown
Secretary....Mrs. W. G. Flanigan, Jamestown

Your County's Medical History.

Here is a definite objective for our County Auxiliaries which will appeal to every loyal woman of the profession.

At the annual meeting of the Kentucky State Woman's Auxiliary held in Frankfort, September 21-22, 1926, Dr. Irvin Abell, President of the Kentucky State Medical Association, inspired all those present with a desire to further commemorate the memory of Kentucky's outstanding pioneers in medicine. An excellent suggestion, is it not? And one in which the Woman's Auxiliary will find great pleasure and interest.

In order to do this effectively, we need more complete knowledge of who these pioneers were, where they served and what they did. At present, our historical data concerns but few of the noble army of medical men who gave their lives in service to the sick and needy of Kentucky.

It is suggested that the Woman's Auxiliary of each county constitute itself a committee to obtain all the information and medical historical data for its county, securing original copies, bona fide statements, old letters, old county society reports and papers, old newspapers, books, magazines, pamphlets, prints, drawings, etchings, wood cuts daguerreotypes, tintypes, water colors, photographs, pictures of any description and material of whatever value. This material should be sent to the Secretary of the Kentucky State Medical Association—Dr. A. T. McCormack, 532 West Main Street, Louisville, Kentucky. It would be advisable too, perhaps, for each county auxiliary to appoint an historian to compile the history for that county when the historical data has been accumulated. However, the State Medical Association will want all the original material available.

Will you not communicate with the President of your county unit and ask her to make sure that your county gets an early start in this project? These win'try days and evenings are splendid times for browsing in all the old books and papers and for conversations with the neighbors about the days of the "Good Old Doctor." If your county is not organized, will you not get in touch with the other women in your county who are eligible to membership and proceed to

organize? The December issue of the Journal, the Woman's Auxiliary Number, provides you with all the information necessary. The President, Mrs. V. A. Stilley, the Secretary, Mrs. A. T. McCormack, your Councilor, and all the other officers of the Kentucky State Woman's Auxiliary stand ready to help you in any way possible.

OUR NATIONAL MESSENGER

The "Bulletin of the Woman's Auxiliary, American Medical Association" (a quarterly) made its first appearance with the January 1927 issue. This neat, compact little booklet is filled with information and will be welcomed by every member of the Auxiliary. The method of financing and of circulating the Bulletin has not yet been adopted. This matter of business will be discussed at the next annual meeting, May 16 to 20, 1927 in Washington, D. C. Mrs. Allen H. Bunce, 360 Ponce de Leon Ave., N. E., Atlanta, Ga., is the Editor and shows in this publication the same breath of vision, enterprise and effectiveness as were demonstrated in her earlier work as Corresponding Secretary of our National Organization.

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Permeability of Lung Alveoli to Dyes.—Hirakawa states that the normal alveoli of the lungs of the rabbit allow many dyes in aqueous solution to pass through. The basic dyes pass easily without regard to their grade of diffusion; dyes whose grades of diffusion are high also pass easily, but those with low grades of diffusion pass with difficulty. The lipid-soluble ones seem to pass easier than the lipid-insoluble ones. Alcoholic solutions of dyes act similarly to aqueous solutions. Dyes injected into the alveoli never penetrate into the pleural cavity or into the circulation.

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COUNTY SOCIETY REPORTS

Warren: At the December meeting of the Warren County Medical Society the officers elected were as follows:

A. D. Donnelly, President; Roy Newman, Vice-President; Hal Neel, Secretary-Treasurer.

HAL NEEL, Secretary.

Hardin: At a regular meeting of the Hardin County Medical Society held February 10, 1927, the following members were present: H. R. Nusz, President; J. C. Mobley, W. F. Alvey, J. M. English, C. W. Rogers and D. E. McClure.

After the regular routine of business, including the report of cases with discussions, an amendment to the By-Laws was offered to be voted on at the next meeting.

"An amendment to provide that no doctor residing in this county who has not attended at least two regular meetings of the Hardin County Medical Society during any one year shall be eligible for membership."

During the discussion, it developed that there is an opinion among the doctors that there are some men who join the Society and keep up a merely nominal membership with the sole idea of securing its defense benefits and it is thought that this amendment should remedy this condition.

The meeting adjourned at 3:00 p. m. till the regular meeting in March.

D. E. McCLURE, Secretary.

Franklin: At the regular monthly meeting of the Franklin County Medical Society held at the Capitol Hotel, Thursday January 6th, at 12 m. there were present Drs. Coblin, Darnell, Ginn, Travis, Budd, Youmans, Coleman, Garrett, Jackson Stewart, Heilman, Minish.

Meeting was called to order by the president, John P. Stewart. After transacting all business before the society and discussing Clinical Cases, the society went into election of officers for the ensuing year, which resulted in the following being elected:

T. M. Travis, President; C. E. Youmans, Vice-President; Flora W. Mastin, Secretary-Treasurer; R. M. Coblin, Censor; John Patterson, Censor; G. A. Budd, Delegate; C. T. Coleman, Alternate.

After the business meeting the members of the society were entertained at dinner by the retiring president, J. P. Stewart.

F. W. MASTIN, Secretary.

Grant: The Grant County Medical Society meets regularly every third Wednesday at 7:30 p. m. of each month. We have twelve active members in the county. All have paid their dues last year and all have paid for this year except three, who will soon. We haven't any regular

meeting place, as we meet at different towns on the vote of the members present.

At our last meeting held on December 15, 1926, at Dry Ridge, the following officers were elected:

Chas. D. O'Hara, Williamston, President; Jno. G. Renoher, Dry Ridge, Vice-President; H. F. Mann, Crittenden, Secretary and Treasurer; Program Committee: I. L. Price, and C. M. Echler.

Case report by Dr. C. A. Eshler, of a refracture of middle third of femur, of two months' duration, where there seems to be no union whatsoever. N. H. Ellis gave a very interesting talk along the line of public health.

H. F. MANN, Secretary.

Fulton: The Fulton County Medical Society met at Fulton, February 11th at D. L. Jones' office. The following officers were elected for 1927:

J. C. Morrison, Hickman, President; Henry Alexander, Fulton, Vice-President; H. E. Prather, Hickman, Secretary and Treasurer; D. L. Jones, Fulton, and Charlie Curlin, Hickman, Delegates.

Number of cases reported and adjourned to meet at Hickman, March 15th, 1927.

S. COHN, Secretary.

Scott: January 6, 1927, Scott County Medical Society met for a regular monthly meeting, Thursday 2 p. m., the following officers and members present: L. F. Heath, President; H. H. Roberts, Vice-President; A. Stewart, Secretary-Treasurer; E. C. Barlow, D. B. Knox, William Mason, P. H. Crutchfield, H. V. Johnson and S. S. Ammerson. Visitors: Dr. Jethra Hancock, A. A. Surgeon U. S. P. H. S., Louisville, Kentucky, Dr. J. S. Lock, Director of the Bureau of Tuberculosis of the State and Mr. Riley, U. S. P. H. S.

Minutes of previous meeting read and approved, after which we had an excellent lecture on venereal diseases by Dr. Hancock, which was discussed by several members present. Then the society enjoyed a good paper by Dr. W. S. Allphin, "Heart Diseases, Etiology Prevention and Treatment," which was freely discussed, then a forcible talk by Dr. Lock on Tuberculosis. After which the meeting adjourned to meet at the City Hall, the first Thursday in February at 2 o'clock to hear a paper by Dr. S. S. Ammerson. Subject, "Electrical Currents and Treatment of Diseases."

A. STEWART, Secretary.

Simpson: The Simpson County Medical Society at its final meeting for 1926 on December 14th, elected officers for 1927 as follows:

E. K. Lamb, President; J. T. Carman, Vice-

president; N. C. Witt, Secretary-Treasurer; J. W. Hayes, Censor for 3 years; J. T. Carman, Censor for 2 years; W. L. Vickers, Censor for 1 year; S. B. Hinton, Delegate; J. R. Claypool, Alternate.

A very interesting meeting was held. Eight doctors were present. No regular program, the entire time being devoted to case reports and discussion of same.

It is the intention of the Society to meet at 1:30 p. m. the second Tuesday of each month throughout the year 1927.

N. C. WITT, Secretary.

Adair, Green and Taylor Counties: The January meeting of the three societies was held in Greensburg on the 14th of the month. Because of bad roads in the various counties the attendance was small but enthusiastic. Dr. H. B. Simpson of Greensburg read an interesting paper, subject, "Pneumonia." The discussion was general.

E. L. Gowdy of Campbellsville reported a case of difficult labor with unusual complications including a constricting ring forming in the uterus between the head and the shoulders. W. B. Atkinson read a questionnaire on the "Use of Radium and X-ray in the Treatment of Uterine Cancer."

The joint meetings are held alternately in the three counties, the respective county societies retaining their identity. This plan was first tried in October of last year, and the interest and enthusiasm has well warranted the little extra effort. It has been the policy to have two papers at each meeting. Those by the members have been on subjects met every day in country practice. Outside speakers are invited at intervals and present subjects in which they are interested. We would recommend that other counties with a small membership try this plan.

W. B. ATKINSON, Secretary.

Hardin: At the regular monthly meeting of the Hardin County Medical Society, held on January 13, 1927, the following members were present: C. C. Carroll, President; H. R. Nusz, C. W. Rogers, J. C. Mobley, W. F. Alvey, J. M. English and D. E. McClure.

After the regular routine of business was transacted, the following officers were elected:

H. R. Nusz, President; W. F. Alvey, Vice-President; D. E. McClure, Secretary-Treasurer; C. C. Carroll, Delegate; J. C. Mobley, Alternate, and C. W. Rogers, Censor for three years.

This was a splendid meeting considering the bad weather and all felt well repaid for their sacrifice in attending. The meeting adjourned at 3:00 o'clock p. m. till the regular meeting in February

D. E. MCCLURE, Secretary.



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BEING THE JOURNAL OF THE KENTUCKY STATE MEDICAL ASSOCIATION

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EDITORIAL

PRACTICAL ETHICS.

At the recent Congress on Medical Education, held under the auspices of the American Medical Association in Chicago, Dr. Arthur Dean Bevan, the Chairman of the Council on Medical Education made the following plain statement of facts in an appeal to the profession, under the title:

"The Need of Teaching Medical Ethics."

"Another problem which must be solved by sound medical ethics has been left on the doorstep of the profession by prohibition. From the standpoint of personal hygiene and public health, legislation has never been passed that has such possibilities for good as has the prohibition amendment. If it was in the power of the nation to legislate out of existence tuberculosis or cancer, such legislation would be passed over night and be strictly enforced. Drink did more injury to the people of this country under the old order of things than either of these plagues. Prohibition has accomplished an enormous amount of good, and with better enforcement can accomplish much more for the health and welfare of our people. The medical profession, as a whole, recognize this fact, and support the constitution and the amendments. On the other hand, a noisy active minority of the medical profession are taking advantage of certain provisions of the amendment and selling their souls for a mess of pottage."

"The United States government, in framing laws under which the prohibition amendment functions, made liberal provisions for the use of alcoholic liquors by the members of the medical profession who think that such alcoholic liquors are of value in the treatment of disease. The government regulation permits a physician to prescribe 100 pints of whisky to his patients every three months, or 400 pints a year. In addition, he can secure 12 pints of whisky and 5 gallons of pure grain alcohol each year to be used in his office work. The 5 gallons of pure grain alcohol does not have any special value as a sterilizing agent or as an external application over denatured alcohol, which can be purchased for a small cost. This could be used, and is used, largely as a beverage. Diluted with an equal part

of water and with a little juniper extract, this makes synthetic gin, and from the 5 gallons 80 pints of this synthetic gin can be made. In total the government has made it possible for a physician to prescribe for his patients 400 pints of whisky through his prescription books, 12 pints of whisky in his office and 80 pints of synthetic gin—a total of 492 pints of alcoholic liquor a year."

"Previous to the time of the Volstead Act, honest physicians in general practice never prescribed 100 pints of whisky to their patients in a period of three months. I have practiced medicine for many years and I have never prescribed whisky except to a patient threatened with delirium tremens to tide him over, and I have not had a case of delirium tremens in my work since prohibition has been in force. At the Presbyterian Hospital, the drug room has not issued a single bottle of whisky since prohibition, and we take care of more than 12,000 patients a year. We do not have any regulation against the use of whisky as a medical agent. Our fifth year committee, which supervises the intern year, found that interns took out books and sold them. The committee notified the interns that such acts would invalidate their hospital year and prevent their receiving their medical degree."

"This problem has become a serious one, because in the propaganda against prohibition, a well organized group in the profession, in spite of the liberality of the government in regard to the amount of whisky which the medical man can prescribe for patients, has taken the position that the amount should not be limited and the physician should be permitted to prescribe any amount which he deems necessary."

"Is this not a case for the application of sound medical ethics? The members of the American Medical Association and its constituent societies should study the existing state of facts in the practice of medicine, and write a new principle to meet the new problems that have arisen in this evolution of medical practice. Its house cleaning has always been done by the medical profession, itself, and within the profession. I have every confidence in our profession, in its future, in its honesty of purpose, in its great possibilities for good and in its sound judgment. These

great problems which confront us are not to be solved by individuals but by the profession as a whole. They are to be corrected by constructive criticism, by educational methods and by the acceptance and practice of a code of ethics as clear and simple as the Golden Rule, which will become a religion and control the lives and actions of the members of the medical profession in their relations with all men."

"The Board of Trustees of the American Medical Association recently passed a resolution, offered by President-Elect Jabez Jackson, that the Council on Medical Education should urge on the medical schools the need of teaching medical ethics to their students. What is the best way to teach medical ethics to medical students and the profession? It will not do simply to publish a paper on this subject every few years, or hand to each student when he graduates a copy of 'The Principles of Medical Ethics.' The whole matter of ethical and unethical medical practice is too important. It means life and death, health and invalidism, comfort and pain to thousands of people."

"We must place modern medicine on a sound ethical basis. We must eliminate the unethical things in practice, wherever and whenever they creep in. The remedy lies in the education of the profession and of the public. This means an educational propaganda carried on not one day a year but throughout the year, and year after year, by the organized medical profession, the American Medical Association through its great journal, its Bureau of Health and Public Instruction and its Council on Medical Education. This same work can be carried on in each state by the state societies and their journals. The first class medical schools of the country should teach their medical students sound medical ethics by lectures, precept and example. The national special societies, such as make up the Congress of Physicians and Surgeons and the American College of Surgeons should all do their part in this great educational campaign."

The Journal cordially approves the appeal made by Dr. Bevan. It will interest our readers to know that his audience at Chicago, composed of about seven hundred of the leaders in American medicine, voted unanimously to approve it.

THE HARLAN COUNTY PROGRAM

In the news column elsewhere, we are publishing the Monthly Program of the Harlan County Medical Society for 1927, which has just been received from Dr. M. L. Gunn, the Secretary.

The Harlan County Society is not only one of the largest in Kentucky, but it is one of the very best anywhere. They hold regular meetings at which they serve splendid refreshments and they are doing constructive work. Two of the three original doctors in Harlan are still living and members of the society. This progressive county has among the best hospitals in the state. They have an organized Medical Auxiliary which is putting on a constructive good health program.

Older societies had best be on the lookout for their laurels if they expect to do as good work as is being done by the medical profession in Harlan County.

ASSOCIATION AGAINST IMPURE LIQUOR

The Editor has received a letter enclosing an outline of a new organization under the above title. We have written, declining to be a member and expressing our disapproval of the organization.

This outfit states that it considers it the professional duty of every physician, in those states where the state law does not prohibit, to have a Federal permit, and exercise his privilege, i. e. "prescribing liquor" under the law.

We do not believe physicians should take out such permits unless they sincerely believe that whisky is indicated in the treatment of diseases and we know the great majority of the physicians in Kentucky believe no such thing. We hope the doctors in Kentucky will have nothing to do with any of these organizations that, under one guise or another, are attempting to boost the use of whisky. We are against the use of whisky in any form at any time for any purpose. The law prohibits its use except as a medicine and it must be extremely rare, if ever, that any physician can prescribe it in the treatment of any disease.

AN IMPORTANT MEETING

An important meeting of the Eye, Ear, Nose and Throat Section of the Kentucky State Medical Association will hold its 1927 Session at the Seelbach in Louisville on Thursday, May 12th. Dr. Adolph O. Pfingst is President and Dr. Octavus Dulaney is Secretary.

The following program is an evidence of effective work. Every general practitioner in the state is interested in this program and they are invited by the specialists to join them in making the meeting a success.

OFFICIAL ANNOUNCEMENTS

PRELIMINARY PROGRAM FOR EYE, EAR, NOSE AND THROAT SECTION OF THE KENTUCKY MEDICAL ASSOCIATION

Thursday, May 12, 1927. Seelbach Hotel.
President's Address.

Dr. A. O. Pfingst, Louisville.

Radical Frontal Operation Which Has Given Me the Best Results, With Lantern Slides and Moving Pictures.

Dr. R. C. Lynch, Guest, New Orleans, La.

Arterial Hypertension.

Dr. C. W. Dowden, Guest, Louisville.

Differential Diagnosis in Cases of Tuberculosis of the Eye.

Dr. William C. Finnoff, Guest, Denver, Colo.

The Hypothesis of a Cockle-burr in the Windpipe.

Dr. C. E. Purcell, Paducah.

Analysis of Endoscopic Cases.

Dr. Gaylord C. Hall, Louisville.

Paper on the Eye.

Dr. R. H. Cowley, Berea.

CASE REPORTS.

Cerebellar Abscess of Otitis Origin.

Dr. S. B. Marks, Lexington.

Acute Bilateral Mastoiditis in an Infant, Six Months Old.

Dr. A. L. Bass, Louisville.

Tonsil Diagnosis by the Measurement of the Absorptive Power of the Tonsils—Report of Cases.

Dr. Edmond D. Wells, Louisville.

Case Report of Perithelioma of the Orbital Cavity, in a Boy of Eleven years of Age.
Dr. Robert Walter Bledsoe, Covington.

ORIGINAL ARTICLES

* PUERPERAL CONVULSIONS.*

By G. G. THORNTON, Lebanon.

To those of you who have been engaged in the general practice of medicine, and its collateral branch—obstetrics for five years or over, the thoughts that I may present on this occasion, may appear tame and uninteresting, but I feel sure that at sometime during this period there has been an occasion when my subject was interesting—intensely interesting to you.

It shall be my purpose, not to appeal to, nor to antagonize, the man who specializes in this branch and whose practice is largely done with all of the advantages of the hospital, but to aid and assist, and suggest some thoughts to the general practitioner, that may give some comfort and determination, to him in the management of his cases, where on him alone rests the responsibility of rescuing from eminent danger one, or possibly two lives. However desirable for the doctor and the patient is the hospital for obstetrical cases, we have not yet arrived at the time when all, or even a majority of the cases in the country can have its advantages, therefore these cases must need be attended by the country doctor or the midwife.

Another thing that up to the present is beyond our control to a large extent, is the management of these cases during the period when preventive measures are so worthwhile, on account of our being unable to get in touch with many of them in time.

However, more and more of the women who become pregnant in the last few years, are going to their family physician and putting themselves under his care, and I am persuaded, that we are having less and less, of puerperal convulsions. Most of the cases that I have seen, and I have seen quite a number, have been where they have had no treatment, or where it had been discontinued because it had been decided by the patient or family that it was unnecessary.

THE CAUSE.

There is probably nothing that I could add to those that have been suggested over and over by others, viz: A toxemia, resulting from the pregnant condition in a patient with a nervous susceptibility thereto that results in convulsions.

This toxemia is the result of increased strain thrown on the channels of excretion, which are either inadequate to perform the function of elimination or which from some other reason fail to do so with sufficient rapidity to keep the system so overwhelmed with

*Read before the Kentucky State Medical Association, Frankfort, September 21, 22, 23, 1926.

the poison that the result is an explosion of the nervous system known as puerperal convulsions—eclampsia.

The premonitory symptoms of this approaching condition are, headache, dizziness, spots before the eyes, dimness of vision, nervousness with signs such as edema, especially of the face, high blood pressure and a disturbance of the kidney output. Nature will sometimes make an effort at elimination by a diarrhea or by vomiting.

The old saying that an ounce of prevention is worth a pound of cure is often true, but I am most positively sure that it is true in the management of these cases. It is my opinion in practically every normal woman, who places herself under a competent doctor in the early months and follows faithfully his advice and treatment will pass through delivery without convulsions. You will notice that I say practically every *normal* woman will pass without convulsions, and this means that some will not, and this may be explained by saying that it is not always possible to determine the perfectly normal and that it is not always possible to have entire control over the woman who lives some miles in the country from us, and who it is not possible for us to see every few days.

WHAT SHOULD THE DOCTOR DO?

Always take the blood pressure and test the urine in every case when first seen, and instruct the patient and the husband or some member of the family in regard to the importance of keeping watch over the important symptoms, like nervousness, headache, spots before the eyes and edema, especially of the face. She need not be impressed with the dangers of convulsions, in my opinion, but her husband should, and if she has albumen in her urine with a high blood pressure, she should have her urine examined and her blood pressure taken frequently. Her bowels should be kept acting freely with sufficient doses of Magnesium Sulphate, or, if there is much edema, with Compound Jalap Powder, or, as I usually give it in capsules, 10 grains at a dose with Bitartrate of Potassium a heaping teaspoonful in a glass of water and repeat this dose every 2 hours until free catharsis is obtained—giving a course of this about twice a week. The diet should be light with as little meats as in consistent with health, with milk and vegetables, in order that digestion should be as perfect as possible, that assimilation and excretion may not be overtaxed. If the patient is restless and cannot sleep she should have Chloral Hydrate 15 grain dose with Sodium Brom. 20 to 30 grains at bedtime, repeated if necessary in half the dose in one and two hours. This helps decidedly to keep the patient's nervous system in good shape and

might in some instances be the pivot, that would avert the impending convulsions. The idea is to prevent them if possible, but to be ever ready to treat them if they come, and to do it with dispatch and efficiency. In the country there are still women who will go through pregnancy without ever consulting a doctor, and it is from this class that we see, or, have seen most cases of eclampsia.

Some 20 years ago I was called to see a primipara about 9 p. m. and when I arrived I found that she had been by herself most of the day and that her mind was so eluded that she could give no coherent history of herself and when I prepared some medicine for her that she could not see to take it from my hand. She could not tell when her kidneys had acted and I found with a catheter that her bladder was empty. I made an examination and found the os slightly dilated and very feeble pains, and explained the danger of convulsions developing and gave Chloral and Morphia Sulph. and decided on a case of watchful waiting. The expected happened and she had the first convulsion at 11 p. m. and the second about one hour later, after which she was in a comatose condition until after the delivery of her baby with instruments about 3 p. m. the next day. After the second convulsion I gave her 15 drops of Norwood's Tr. Veratrum Viride hypodermically. She passed no urine at all and when I used the catheter before using the instruments there was less than an ounce of bloody urine in the bladder that had been excreted in the last 18 hours. This woman made an uninterrupted recovery and has given birth to several children since with no trouble in her subsequent labors.

Another case that I saw over thirty years ago the patient came to me a distance of some 9 miles when she was about 7 months pregnant, suffering from headache and nervousness. I found quite a good bit of albumen in her urine. She was given medicine and instructions as to letting me hear from her, and her husband was told of the gravity of the case, but I suppose he thought I was over anxious about the case, and as she seemed to get along very well I did not hear from her until she was taken with labor pains about 2 months later. I arrived about 11 p. m. and found her in labor with rather ominous symptoms and on digital examination I found the cervix slightly dilated with a shoulder presentation. Here I was at the dead hour of night, 10 miles from the nearest consultation with bad roads and no telephone and the woman developing her first convulsion before I had more than completed my examination.

Did I send for help? Not much. I gave

Morphia and Veratrum Viride hypodermically and after she had had two or three more convulsions I bled her a full quart and by this time some 5 hours later, the cervix being fairly well dilated I introduced my hand past the shoulder, secured a foot and by the bipodalic method delivered a dead baby. The woman recovered. I was called in consultation on one occasion several years ago where the woman had been having convulsions all night, according to the family, and had had 6 or 7 after the arrival of the doctor who preceded me and it was estimated that she had had at least 30 convulsions. The cervix in this case was well dilated and a vertex presentation and she had a convulsion while I was making the examination.

The doctor had given Veratrum Viride in 6 drop doses, but we gave more and bled her and then gave chloroform and delivered her with instruments without any trouble and she had one more convulsion after delivery and made a recovery. I recall one case of a primipara 44 years old who had one convulsion at about the fifth month and miscarried, but never had any more babies. I have never seen a case where the woman had more than 4 convulsions after I saw her. Most of my cases have been in primipara and in these several have been in illegitimate cases making it seem that there is more danger from these cases, though this might be accounted for by reason of their not having the prophylactic treatment of the other cases. In one case where there were convulsions with the first baby, efforts were made with the earnest cooperation of the patient to prevent them in the second labor, but they came up. She was attended by another doctor, because of my being away and recovered. In her third pregnancy, she had high blood pressure, headache and some albumen in the urine from the fifth month and was under treatment practically all the time. During the last month her urine was free from albumen, and she was free from headache and her blood pressure was 140 to 160 and she seemed to be doing fine. About two days before I was called she had, as she thought, taken cold and developed a hacking cough and when I saw her she was expectorating ightly with some pure blood in the sputum. Her respiration was faster than normal and she was having slight pains which came on naturally and she was delivered 6 hours later without any trouble of an immature baby which died in a few hours. Her pulse and respiration became faster and the bloody sputum more and more profuse and her mind more clouded. There was dullness over both lungs and she died about 10 hours after delivery from, what I diagnosed as oedema of the lungs. If

labor has not begun, or if it has and the cervix is not dilated, I attend to the convulsions and leave nature to attend to the labor. If it has begun, and the cervix is dilated and I have a vertex presentation, I give chloroform and deliver with instruments, or if it is a shoulder or cross presentation, I give chloroform and turn and deliver. If the convulsions come after delivery I only have the convulsions to attend to, I do that. The idea is, that inasmuch as there is a certain amount of nervous irritability in these cases, and we do not want to add to it by any unnecessary efforts to induce labor, and we want to do all that we can easily and safely to terminate it as speedily as possible thereby giving quiet and composure to the patient.

In general practice these are the cases, where the husband and all of the attendants, who are also the assistants, go "up in the air" and where it behooves the doctor to do something and to do it calmly, deliberately and speedily, if that can be done. It is in such cases that the attendants should believe in the doctor and for the doctor to believe in the measures which he is to use for relief. Any how he must keep his head and do what he does scientifically and methodically. If he has had the time, and the case indicated danger and he has already given Chloral and Bromide by the mouth before the convulsions begun, when they begin he should give Morphia Sulp. 1-4 grain and Veratrine Hyd. 1-15 grain hypodermically. Time is now too precious and absorption is too slow and uncertain to give anything by the rectum or even by the mouth. If the pulse don't drop down to 60 or lower and there are more convulsions, this dose can be repeated after one hour. Chloroform may be given during this period to allay nervousness and retard the frequency and severity of the convulsions, but in my opinion it cannot be depended upon to stop them. If they do not stop now, my custom and practice is to bleed, freely and fearlessly. In a woman weighing 150 pounds, I bleed as much as a quart—1000 cc's. I measure it to be sure of what I am doing. Often I have seen the convulsions cease before all of these measures have been used, and I have never seen more than one convulsion after they had all been used. In case I should ever see such a case I would unhesitatingly use the intravenous glucose solution, or the Magnesium Sulphate solution as others are doing it with apparent success.

Just here it seems appropriate that I should at least suggest a scientific reason for the use of these measures in this spectacular condition which the obstetrician meets. In most of these cases there is a nervous irritability which manifests itself, and

in probably all of them it is there whether it does or not. Chloral Hydrate and Sodium Brom. will to a large extent relieve this. Morphia Sulp. obtunds the sensibility and assists along this line. There is little question, that if these are given early in combination in a great many cases the convulsions can be averted. However, when this is done we have no way of knowing for sure that we have prevented them. Veratrine slows the pulse and reduces blood pressure, and thus relieves nervous tension, thus reducing the tendency to convulsions. Bleeding reduces the blood pressure and removes from the system some of the toxemia and is one of the dependable measures in this condition. On the part of some there is objection to this measure before the completion of the third stage of labor, lest there should be a post partum hemorrhage that might then lead to a fatal result. My idea is, if it is necessary to resort to this to stop the convulsions before delivery, do so and then take care of the post partum hemorrhage when it comes—if it does. In a practice, that now covers a period of 40 years, during most of which time, I have done at least an average country practice, I have never seen a woman die from puerperal convulsions, therefore I don't think it is presumptuous for me to feel that I am as good authority in these cases as any other country doctor who has not done better than this.

In none of these cases have I ever had assistance in my own cases though I often would have been glad to have done so could I have afforded the time to wait. I have sometimes assisted other doctors with their cases and always have used the measures mentioned, and when one was used to the limit of safety, I resorted to the next and if that did not do the work to the next and the in rapid succession until victory crowned my efforts.

DISCUSSIONS

B. J. O'Connor, Louisville: I don't know that I know very much about eclampsia except I hate to hear it spoken of as a disease. I think it is a syndrome, or a symptom manifestation, of quite a number of different toxic conditions. In other words, under the head of eclampsia you can find epileptic convulsions classed, you can find the toxemic conditions from kidney disease, you can furthermore find similar conditions from disease in the liver. Why consider all under the one head as a disease rather than the pathology back of the disease or syndrome.

Practically speaking, while I have seen some few cases of eclampsia, my only interest lies in the prevention. I feel if there is any one tribute that the medical profession deserves a world of credit on, it is in saving the lives of

pregnant women and in bringing into the world the numerous children who otherwise would have died before birth, through prenatal care.

Not particularly in eclampsia alone but in other pre-natal diseases, nurses in public health service are doing the wonderful pioneer work in our hospitals, such as in the University of Louisville City Hospital. No one has ever paid the proper tribute to their work in the cure of eclampsia and syphilis and in saving infant lives.

In regard to eclampsia, I feel the principles Dr. Goldthwait has brought forth are just as applicable in the prevention of eclampsia as all your special medicine.

In addition to your faulty living habits that come up so frequently in pregnancy, there is a tremendous psychic disturbance of the average woman of today. When she becomes pregnant, a whole realm of thought processes are opened up that she is almost on the brink of the grave. She doesn't know what is going to take place, she knows that she is entering a period of life when the outcome is very uncertain, she hears from all her associates and her good women friends, all the great danger. She learns even through our public health nurses the possibilities of eclampsia and all these things. As a result we have a tremendous psychic disturbance and the medical profession, I think, can do a world of good in relieving the mental stresses.

So far as the curative treatment is concerned in eclampsia, I will leave to others to discuss.

Walker Gossett, Louisville: It seems very fortunate that mother nature has so arranged matters that there occur few cases of puerperal convulsions; were it otherwise, I fear the majority of us would want to discontinue the practice of obstetrics. There is so much which might be said, and yet so much that has not been covered in this field, that in any discussion of the subject we are likely to get into deep water.

I wish to call your attention to four papers on puerperal convulsions published in the Journal of the American Medical Association, July 24th, 1926. These papers contain a greater amount of useful information than can be found in any text book. I advise each of you to procure that issue of the Journal and after studying it you will know something more about the treatment of puerperal convulsions. The first paper is by Polak, of Brooklyn,—one of the greatest authorities on obstetrics in this country; the second by Greenhill, of Chicago; the third by Davis and Harrow, of New York; and the fourth by McNeill and Fenwick, of Los Angeles. They discuss the matter in a most scientific and masterful manner, and any of you who have not a copy of the Journal should send for it, read it, and study it. These four articles are all in the one issue mentioned.

We come here and talk glibly about the importance of elimination in the management of

puerperal convulsions, but we do not state what drugs are administered for this purpose. While engaged in the practice of general medicine I always enjoyed reading Hare's "Practical Therapeutics," because in every instance he told us exactly what to do.

There are, of course, quite a variety of drugs which may be administered to secure elimination. Not only the country practitioner, but also the city physician, wants to know what drugs are used. Many of them have said to me: "Doctor, you advise elimination; what do you use for that purpose?" Are we afraid to state the drugs we use because we might be criticised? I am going to tell you, and want to mention two patients coming under my personal observation during the last eight months. Both these patients were sent to Louisville from adjacent towns; in both the limbs were swollen to the hips; the urine showed four-plus albumin, also granular and hyaline casts. I am going to describe the treatment used in these cases. (The same measures have been successful in other cases). Both mothers and both babies returned to their homes "100 per cent perfect."

One of the patients was under treatment in the hospital for two weeks prior to delivery. Nitrous oxide gas anesthesia was used. She had no convulsions, all symptoms subsided, and she returned to her home in splendid condition.

The other patient arrived one Saturday night. She appeared to be in a serious condition, and everybody who saw her urged the necessity of hastening delivery. They said: "give her castor oil, give her quinine, give her pituitrin." My advice was to let her alone, and this plan was followed. Monday about noon labor began, and she was delivered at two o'clock p. m. Eight hours afterward she had uterine hemorrhage, and I am glad she did. She did not have another convulsion and went to sleep.

In the management of puerperal convulsions, it must be remembered that diet is the first important item. I immediately placed these patients on a diet of cultured milk,—buttermilk and water for twenty-four hours. That night I gave each of them a capsule containing:

Calomel grs. 1. ½

Blue Mass grs. 1. ½

Colocynth grs. 1. ½

Next morning one ounce of a saturated solution of mag. sulphate.

As the fecal movement that I desired was not obtained, at two o'clock in the afternoon castor oil was administered, and about two hours thereafter both patients passed quite a quantity of solid fecal material which the medicines previously given had failed to eliminate.

Then followed the administration of caroid and bile salts. I generally give bile salts in tablet form, two about ten o'clock in the morning, and two at night. Continued intestinal elim-

ination is assured by giving magnesium sulphate in the morning. Nephritin is administered to secure kidney elimination, two tablets four times a day, with plenty of water.

Thus it will be noted that we have the liver acting, the bowels acting, and the kidneys acting. Then let the woman alone and permit her to go into labor.

J. T. Reddick, Paducah: I don't think there is any disease or condition that confronts us as general practitioners that is more preventable than puerperal convulsions. We have been learning a great deal along that line the last few years. The propaganda that has been put forth by the State Board of Health and especially by Dr. Veech, who has gone over our country preaching the pre-natal care of our pregnant women, has conspired to put into our minds thoughts that would prevent to a very great extent, or ought to, puerperal convulsions.

For a number of years I have had almost the entire pre-natal care of my pregnant patients, and I have not had a single case of puerperal convulsions in quite a number of years. I have seen a few cases in consultation.

It is the physician's duty, as has been stated, to take the blood pressure, to examine the urine and to keep in touch almost from the beginning or pregnancy until the completion of the third stage of labor.

I believe also in heroic medication when the convulsions come.

I have given thirty drops of Norwood's tincture of Veratrum and a half grain of morphine following the first convulsion and didn't have any more.

I have used calomel and compound extract of calocynth as mentioned by Dr. Gossett time after time. There are patients that cannot be treated ery well per oram. Their toxemia is such that they are unconscious and it is difficult to get medication down them, but in most cases you can get something, you can put the calomel into the mouth, or in extreme cases you can put a couple of drops of castor oil, though that must be extreme. You can give them a saturated solution of sulphate of magnesium in teaspoonful doses every ten minutes until you get elimination that way. If you cannot do that you can give them gastric lavage and colonic lavage and get results that way.

I depend a great deal on Veratrum and morphine, and have done so for years. That is what might be considered now a modified Stroganoff treatment as advocated by Stroganoff of Russia, I believe.

I am sure that if we can have the care of our women we can largely prevent these puerperal convulsions.

Dr. Carpenter: What about the patient's eyes ophthalmoscopically?

Dr. Reddick: That is an extreme condition

and then I would refer it to the optician.

G. G. Thornton, Lebanon (in closing): I thank those most heartily who have so uniformly agreed with me in the thoughts I have presented. Especially do I appreciate the thoughts presented by our eminent visitor in her concurrence with my views about not only the prevention but the treatment.

The only criticism, it seems to me, that has been offered, was one in which if I made a mistake I stand corrected, and that is that eclampsia is really not a disease. If I stated it was a disease I don't recall it, and I think it is only a manifestation of a combination of conditions that result in this manifestation.

The other criticism, it seems to me, was made by my good friend, Dr. Gossett, who says I didn't tell anything about what to eliminate with. If you will bear me witness, that I said, I give ten grains of jalap at a dose with bitartrate of potassium a heaping teaspoonful in a glass of water every two hours until free catharsis is obtained. Don't you think that will eliminate some? If you don't think so, try it and see.

One gentleman asked me privately about how many cases of eclampsia I had seen and possibly that might be interesting, but unfortunately I have to depend on my memory for that. I can say, however, that in an experience extending over forty years, six months of which time I was an under graduate, for the last twenty-five years I know that I have delivered from fifty-five to ninety babies a year and I feel it is fair to presume that I have had at least 2000 to 2500 cases of obstetrics in that time. That is my estimation. And I will guess that in my own cases and in cases in which I have been called in consultation I have seen as many as probably thirty cases of eclampsia in the forty years. I want you to understand that while I claim that I have given my cases scientific treatment, I consider that I have been lucky in that I have not seen a case that would develop eclampsia and die before I could have a chance to give scientific treatment. I have not only been lucky, but I claim that I have been scientific.

I was delighted to hear Dr. Reddick speak so favorably of the veratrum. If the pulse comes down below sixty you can depend upon it that veratrum will come very near stopping the condition. If it doesn't, my practice is to bleed and to do it thoroughly.

Pneumatic Rupture of Bowel.—Hays reviews twenty-two cases already on record, and reports one additional case in which the rupture was caused by the entrance into the rectum of air under a pressure of 95 pounds. The mortality in this series of cases that went to operative intervention was 50 per cent. The author's patient recovered.

THE CARE AND TREATMENT OF THE PSYCHO-NEUROTIC.*

By JNO. J. MOREN, Louisville.

The care and treatment of the psycho-neurotic is a very broad subject. The word "psychoneurosis," like malaria or rheumatism, includes "57" or more varieties. The term has been accepted and used in a general way to include that great class of unfortunate people who show no demonstrable physical or mental defect, but suffer from an unlimited variety of nervous symptoms.

Those cases presenting actual signs of mental aberration are not included under the head of psychoneurosis. The term "psychoneurosis" means a morbid mental or nervous state. It includes the various types of neurasthenia, psychasthenia, hysteria, hypochondriasis, etc., the so-called functional nervous diseases. Frequently it is difficult to differentiate the special type, as often they are mixed and the term psychoneurosis covers the diagnosis.

There are a lot of individuals who seem to have escaped this classification of the psycho-neurotic. Sometimes they are just as annoying. I need only to refer to the golf crank.

As the group is usually dubbed "Neuroses" we will hold to the broad title assigned to me and discuss them as a whole, but special reference is made to the psychasthenic.

That we may better understand how to care for and treat these cases, it is well to know the disease better. Nervousness is like greatness, some are born nervous, others have nervousness thrust upon them. I believe we are victims of our inheritance and environment.

For convenience, and in view of the prognosis, we will divide them into the hereditary and acquired. By heredity we do not mean a direct inheritance. You doctors of the country see and know several generations of a family, know their gifts and weaknesses; they marry and inter-marry, show tendencies of regression instead of progression; their inferiority or feeling of inferiority pushes them back, they cannot compete. Some with or without accident, shock or disease light up a train of symptoms. They seek relief for palpitation, insomnia, phobias, etc., that are really dependent upon fear, introspection, or self-consciousness brought about by hereditary tendencies and environment. They have, as it were, grown or developed to such a condition.

The acquired is quite different. A man has made good, he works hard, loses sleep. He drinks and smokes to excess. He drives himself. Suddenly, after "flu" or severe strain

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has a dizzy spell with palpitation. He is seized with a feeling of impending death. He is harassed with a dread or fear of another attack. He avoids everything and everybody with a long train of symptoms for his family, friends and doctors to listen to.

A woman born of good stock and the possession of a good healthy body married, has children, works hard, has some illness, or possibly family troubles, starts with vague aches, restless nights, eats little and soon develops the picture of the so-called neurotic. As we all work and have our troubles, you might ask why not more people suffer from nerves. This brings us to an important question which I feel is overlooked. That is, the personality of the individual. It is not how you would react to such circumstances, but how the particular personality, the patient before you, reacted. We all behave or react differently. We are not all endowed with the same capacity to endure. We do not carry our burdens the same way.

We, as physicians, are schooled to overlook risk, or reaction to certain situations. Like the workman at dangerous trades, our feelings are curbed, consequently we are prone to treat these unfortunates as a class and not as individuals.

Regardless of the theories as to the origin or cause of these conditions, whether we accept the theory of Freud: whether we believe in the question of constitutional inferiority, whether we hold to a physical basis, their symptoms are practically the same. It is a morbid mental or nervous state. To many it seems they will not try to dispel from their minds the fear or obsession. Their real condition is such they cannot will. These fears, etc., so dominate their mental life that they are seemingly powerless to associate ideas or reasons about their condition. They cannot reach a conclusion or settlement in their own minds. They understand your explanation, but they do not always dispel their doubt which prevents a final judgment or rid them of troubles.

In addition to the nervous symptoms they have various physical signs and symptoms. It is not uncommon to find pelvic pathology, ptosis with its varied symptomology. With the mental inertia there is muscular asthenia, leading to false posture, which naturally results in various aches and pains.

It is not within the limits of this paper to mention all the symptoms, but the reference so far is sufficient to lead one to believe that many of the "Neuros" are sick as well as being nervous. If they are sick physically it accounts for the nervousness and their complaint is not all foolishness. I have under observation a lady physician, who by accident

is now a so-called Neuro. She says "I never realized the condition of those poor nervous people."

You, as practitioners, are familiar with the Neurasthenic, Hysterical, and Hypochondriacal patients.

The management of this class of patients is a task most doctors try to avoid. The results are not always what we would desire, but a great deal can be done for them. Many are cured and made happy. A good percentage are relieved to the point where they can carry on, while a lesser number remain "Neuros."

Those who are neurotic by heredity, constitutional inferiority, are the least amenable to treatment. They are almost beyond hope, especially of becoming President of the United States. They tax the patience of everybody. I sometimes feel that the best remedy would be to transport them to a new world, away from relatives where they could grow up with the country, re-live their lives under new circumstances and environment.

The care and treatment of the psychoneurotic depends upon the circumstances and nature of the individual case. Each is a problem of themselves. In many instances it is a situation to be managed rather than one requiring medical treatment. No fast rules can be laid down. It is the judgment of the attending physician to decide. Expressed in the language of the stock market, "they are good for a long pull."

The first and most important thing to do is to win the confidence of the patient. Nothing equals honesty and frankness with this type of patient. If you tell them that you do not know what ails them, some day they will come back to you for your opinion of other questions because you were honest.

Medical: My experience has led me to believe that too much stimulating and sedative remedies are used. If the patient can be controlled otherwise, it is far better to leave off, or to use as little as possible of symptomatic medication.

The majority of so-called "neuros" that come to me are to my opinion and belief neurotic from accident or disease, therefore, it is my aim to improve this condition. It is my experience that Iron is one of our best remedies for the neurotic. Improve the oxygen carrying powers of the blood with appropriate rest and food, and you will relieve many of their symptoms.

You work with the object of increasing the endurance and by accomplishing this your patient will fatigue far less, and show less nerve irritability, which account for so many of their symptoms.

Many of them have grown accustomed to

hypnotics and rely upon them to produce sleep. They are going to have many nights of restlessness and sleeplessness regardless of the hypnotics that you use, and it has been my practice to avoid these and resort to general reconstructive measures and re-establish the habit of sleeping. I am satisfied that this procedure is the wisest. In other words my procedure is to work for the tomorrow and not for today. I do not mean to imply that I do not use sedatives, but I do wish to state emphatically that it is the too frequent and large doses that do the patient no good.

My line of medication is one of two procedures. First, and most essential, is the digestion. The old adage, the way to a man's heart is through his stomach applies here. If you can eat and digest it you feel better with the world. If the digestion is going good I give Iron in small doses. If these procedures are not indicated I resort to re-education and persuasion with some simple medication to satisfy the patient.

Psychotherapy: The majority present psychic symptoms and these are met only by psychological procedures. While there may be a physical basis as the origin of these symptoms, correction of such condition does not always correct a habit of thinking and feeling, consequently, a re-education is required. It is natural to fear. We all have imperative ideas, we are obsessed at times with various thoughts, but our attention and interest, and effort upon our part, will power, throw them aside for other things. If we revive these often enough they will soon become a part of us, habit.

Psychotherapy is very important and unfortunately has been over used or not properly used. I am not an advocate of psychoanalysis. Cases which I have seen that have been psycho-analyzed are far more miserable than before. No doubt in the hands of certain men this procedure has been successful. I do not believe that Freud's theory of the origin of psychoneurosis will hold true, consequently, I cannot resort to his procedure of a cure.

The psychotherapy which I use is a wholesome talk concerning the many things that come up in daily life and in the mind of these patients. Frequently instances have been misinterpreted. Many things they do not understand. They do not thoroughly realize the position that they are in. They are lost, as it were, not knowing what to do. My object is to find out, if I can, the things that are troubling them, their complex. I do not suggest various subjects for discussion I let them tell me what is on their minds. By avoiding suggestions I do not put new ideas in their heads to worry them.

In many instances the patient is to be re-educated how to combat fears, etc. They have avoided the things that associates or recalls them until they are shut off from the ordinary life.

My practice is to insist as natural a life as possible. The earlier they are shown that they can go in crowded places, etc. the better. To lose sight of the consciousness of any act is to become accustomed to it, and soon they find that they can perform these acts without self-consciousness. It is a question of persuasion and re-education. These procedures require patience and time to show results, but I am convinced that it is the only rational psychotherapy.

Sanitariums: When should they be put at rest? This is answered by their physical condition. If there is marked weakness and fatiguability, rest saves them. Those cases with pronounced fears, impulses, etc., sometimes do better at rest and confinement. It takes a changed environment and routine to impress them, but a few weeks at a hospital will not do, it requires months. Because a patient becomes dissatisfied is no reason to change sanitariums. It is not what they want that is going to help them, but it is what they get. Unfortunately their friends interfere at this discipline and spoil results.

There are certain individuals if put to bed, they fret, are more restless, and suffer more than when allowed freedom. Action seems to help them control their tension or restlessness.

Sometimes a partial rest cure will give better results. It is well to see that the patient is satisfied and willing to cooperate, otherwise your work is without results.

Confinement in some sanitariums is worse than the jail. At the jail we mingle with people without feeling, sleep on hard beds, and they might harden the sensitive.

Taking a rest cure in some hospitals is like resting in peace and quiet at a busy street corner. At home there is no peace. To find a suitable place for them is often most annoying. You find yourself saying, if not singing that popular song, "What'll I Do."

If sanitarium treatment is advisable the larger institution with physiotherapy department and other procedures that helps to keep the patient occupied are to be preferred. These places are beyond the means of most patients, and home treatment is their lot, and well it is, for sanitarium care alone does not correct complexes.

Occupation: "The idle brain is the devil's workshop" certainly applies to psychoneurosis. If we can get these patients interested in something else other than the "me", it is the best dose of medicine that you could give

them. Many of these cases I never permit to quit work. Frequently they need the compensation, and they certainly need the occupation, and with the demonstration that they are capable of doing, creates a more favorable position than idleness and being in debt. Those cases that have no vocation or from their physical condition are incapacitated for work, occupational therapy can be used to an advantage. An elaborate occupational therapy shop is not needed or essential. Many little turns can be resorted to that would accomplish the same object, that is, arousing an interest or the "will to do" things, rather than nurse their own miserableness.

A popular remedy is to take a trip, go South, go to the Springs, go somewhere. The best thing that a trip does is to relieve the doctor or household for the time the patient is away. A pleasant sojourn to a foreign place does any one good. It helps to shake off the burdens and allows a new grip on things, provided we are in reasonable good health, but a few weeks does not cause these people to change their way of feeling or thinking. Their habit of association of ideas is too firmly fixed to be affected in a short time. The result of such procedure is usually a depleted pocketbook, which makes them feel more discouraged. If the patient has the means, can really enjoy a certain place or willing to enter into the spirit of having a good time, all well and good, but let them know that no miracles are to be expected.

Many of these cases have pathological conditions, as pelvic, rectal, gastric ptosis, etc. These conditions demand attention and should be corrected, but the removal of such pathology will not cure the psycho-neurotic. It is not an uncommon experience to have a patient say, the operation did me no good. It is my practice to have the condition demanding an operation corrected, but less serious conditions are put off until they are more able to "come back" from the shock of the operation. Extracting teeth, pulling tonsils, fitting glasses, etc., do not cure, they only remove sources of irritation or infection.

Discourage changing doctors. Their friends doctor is not always the best. Sometimes a change is advisable, but drifting from one to another, hearing different interpretations and suggestions only increase their doubt, and confuse their opinions of the real condition. If the patient has no confidence in the physician, this is reason for a change. I have seen them leave their family physician, in whom they have confidence, in order to be under the care of a specialist. Sometimes this is good, but often it is not.

Financial: If you are a family doctor your duty is to treat the patients. Why should

you decline these cases for the reason you have no patience with neurotics. Why show your psychopathic inferiority by a lack of patience with such patients. Possibly your patience in the early stages might cut short their duration. Don't send them away with the statement that "it is all imagination." If they consume your time, charge them accordingly. It is skilled work, and skilled workmen demand good pay.

It has been my fortune to see these cases treated by many different methods. Weir Mitchell treatment, hypnotism, various sanitarium methods, osteopaths, chiropractors and all kinds of quacks. Each individual has his choice, but the thing that does the most good is the method that rests upon common sense, that is to improve their physical condition, common sense living, with time to effect changes.

DISCUSSIONS

W. E. Gardner, Louisville: I enjoyed Dr. Moren's paper as I always do any paper that he presents to a medical society because it is always extremely interesting and practical, and it is a pleasure to enter into the discussion of the subject presented today.

He spoke of the condition of the psycho-neurosis in a general sort of way with particular reference to the condition of psychasthenia. These cases of psychasthenia, this particular type of psycho-neurosis, are perhaps the most difficult ones that we have to handle. This is the individual with the peculiar phobias and impulses, the so-called "obsessive-compulsive" neurosis, in which Dr. Moren says suddenly a patient has peculiar physical symptoms with a good deal of emotional upset and fright at the time. He develops a state of anxiety. Unconsciously, if not consciously he has a fear that he is going to die, if not at that particular time at some future date. From this original phobia he may develop quite a variety of other phobias. This big phobia becomes split up into a lot of little phobias of other sorts, but a great many of them are only symbolical of a particular fear he has developed, and frequently that is the fear of death or sudden serious illness.

These cases apparently come suddenly. As Dr. Moren says they are more likely to occur in the unstable individual where there has been a hereditary tendency to nervous diseases in the family. While even these conditions might be said to be acquired due to some exciting cause that took place at the time, yet back of even some of the acquired types is this unstable condition which he referred to as the hereditary type.

It is always a most difficult task to get rid of these phobias, to find out and try to show the patient, if possible, the source upon which his phobia is founded.

Dr. Moren said that he does not believe in psycho-analysis, and personally I do not unless it can be done very thoroughly. I think there are very few men in this country who do psycho-analysis thoroughly. It is a long, tedious process. It is a process sometimes extending over six months a year; or two or three years, to relieve a patient completely by psycho-analysis. It takes a lot of time, patience and skill, with a personality peculiarly adapted to that kind of work. The patient who is partly or incompletely psycho-analyzed is frequently made much worse than if it had never been attempted.

I do not believe in some of these persistent cases of psychoasthenia with these peculiar phobias, the source of which the patient himself is not able to understand and he realizes himself how foolish his fears are, that there is usually a psychological background. Things have been put out of his mind, so to speak, but have really been put in more deeply and require some sort of psychological investigation to reveal them.

We all do more or less short cut psycho-analysis by listening to the patient carefully, being honest with the patient and hearing his full story. If he has no physical disease assure him as soon as possible that that is true. A thorough physical examination is necessary in these cases, as Dr. Morrison said, because we want to assure the patient that there is no physical background for these conditions. After this has been determined by a reasonable method of investigation, then we should assure the patient that he has no physical organic condition, but admit that he is an ill person, he is nervously and mentally ill for the time being, and it is better to take this position with the patient than to try to dismiss him with the idea that symptoms are imaginary. The patient then begins to have confidence. I feel we should not be embarrassed in having these patients come to us over a good long period. I think the general practitioner feels if he is not able to relieve the psycho-neurotic patient in a reasonably short time it is not fair; that the patient is imposing upon his time; that he is imposing upon the credulity of the patient and he is inclined to dismiss them too soon.

We, either as practitioners or specialists, must take more time; let the patient come to the office repeatedly and tell his story. That is an analysis in itself. Listen to him patiently. If there is no special medication to be given, sometimes certain remedial measures may be used. One would be justified perhaps in using moderate static electricity or the ultraviolet ray, if necessary, to form an excuse to have the patient come back to your office for these conferences with him. If you are not willing to do that say to the patient frankly, "This is going to require some time. Come to the office regularly two or three times a week, tell your story. We will lis-

ten to it and see if we can find out what the conflict is." You are often able to help them greatly.

Some of these patients are never entirely well. They are relieved for the time being, especially this hereditary type of instability. We are not able to cure these patients but we are able to relieve them. Sometimes they will be relieved for months or perhaps years, then circumstances will arise, domestic strain, emotional shocks, and then will have relapses. Let them come back to you. You are able to support the patient through a great many years and are often able to do a very useful work. We should not be embarrassed in saying to the patient that he may have a relapse, but if he comes back with the symptoms, say to him that you will try to support him again.

I would insist upon honesty and sincerity with these patients, as suggested by Dr. Moren, and I do feel that a sympathetic understanding of these patients and some sort of a practical analysis of their condition is essential, and will in the long run bring the best results.

CESAREAN SECTION, WITH SPECIAL REFERENCE TO THE LOW OPERATION.*

By SCOTT D. BRECKINRIDGE, Lexington.

Although the subject of Cesarean section may appear a hackneyed one to present before any medical body today, yet the large number of articles appearing annually show that this subject remains one of general interest and the fact that many of these articles deal with the advantages of the low, or cervical, operation over the classical while the majority of those doing operative obstetrics are very slow to adopt this technic may serve as excuse for this presentation. If further excuse be needed, let it be found in the fact that our National sesqui-centennial of the Porro Cesarean section with hysterectomy and the centennial of the extra-peritoneal operation of Bandelocque.

There is no intention of exhausting the time and the patience of this audience by a review of the history of delivery by the abdominal route. It is sufficient to say that, from the presentation of the radical operation by Porro in 1876 and the conservative operation by Saenger in 1882, the operation has been fairly well standardized, its indications have been constantly broadened and obstetricians have constantly sought to so improve its details as to remove the excessive morbidity and mortality that were bound to accompany it when used as an emergency rather than as an elective measure. As an in-

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dication of this mortality, it may be noted that Cesarean section ranked second only to puerperal infection as an obstetrical cause of death in Massachusetts in 1922.

The more pronounced departures from the so-called classical technic have all aimed at an approach through the thinner, relatively immobile cervix and are broadly divided into the extra-peritoneal and trans-peritoneal types. The basic work of Sellheim has led to the two diverging types of Latzko and of Kroenig, one a true extra-peritoneal and the other as definitely a trans-peritoneal operation. According to DeLee (1), there are now some twenty variations of abdomino-cervical delivery. Very able and comprehensive summaries of the advantages and disadvantages of the various types of operations have been presented by McGlinn (2) and by Phaneuf (3). There can be no doubt that, with the increasing importance that is being placed upon the interests of the unborn child and the appreciation of the immediate and distant harmful effects of the more serious procedures for operative delivery by the normal passages, obstetricians feel keenly the necessity for lowering the material hazard in that type of neglected or mishandled emergency where abdominal delivery is most indicated and, at the same time, most fraught with risk for the mother.

With the vast majority of deliveries performed by the general practitioner in the patient's home and a very large proportion of the operative deliveries performed by the general surgeon in general hospitals, the problem does not appear to be the decision where-in lies the best procedure to be employed by the trained obstetrician in the properly equipped maternity when dealing with his own patients. To the man trained surgically, but not obstetrically, the abdominal delivery will probably always be the method of choice in emergency. The patients that come to such a man are generally those that have been in labor for many hours; have had repeated vaginal examinations in the home, without the precautions of vulvar shave and preparation and frequently without rubber gloves, and have not infrequently had unsuccessful attempts at instrumental delivery by the normal passages. With statistics proving that the maternal morbidity and mortality vary directly with the duration of labor, its duration after rupture of the membranes, the number of vaginal examinations and manipulations, particularly attempts at delivery, and laxity in the strict observance of the aseptic technic, what is the surgical consultant to do with these patients who are obstetrically incompetent so far as spontaneous delivery is concerned? In the final analysis, he

has no alternative to the abdominal delivery. But, even though driven to the abdominal route, it is certainly incumbent upon him to choose that technic which offers the best immediate and distant prognosis for mother as well as child.

Upon such premises, three general types of operation offer: one of the modifications of the so-called classical operation, as developed by Saenger; one of the modifications of the extra-peritoneal operation, suggested by Baudelocque in 1826 and perfected by Latzko in recent years; and one of the modifications of the trans-peritoneal operation, of which Kroenig's technic is probably the best known and most widely practiced. It is believed that the second of these choices may be discarded as offering difficulties sufficiently beyond the attainments of the average surgeon, only occasionally operating in this field, to make the danger to the mother from the operation out of proportion to the probable benefits. The classical operation has in its favor two points,—it is one of the simplest operations in abdominal surgery and is one that lends itself to speedy performance. To these, a third might be added,—when combined with hysterectomy (the Porro operation), it still constitutes our safest abdominal procedure in frankly infected cases. DeLee and Cornell (4) summarize its disadvantages as “(1) the too high maternal mortality; (2) the high primary morbidity; (3) the late morbidity; (4) adhesions; and (5) rupture of the uterus in subsequent pregnancy and labor.” The same authors give as the advantages of the low operation the greater resistance of the cervix to infection; the greater resistance of the lower abdomen to infection; the location of the wound in a portion of the uterus that is relatively immobile and unaffected by either after-contractions or the tissue changes of involution; the relative absence of danger from lochial leakage; the reduction of adhesions to a minimum; the reduction of subsequent rupture of the scar to a minimum, there being only five such cases reported, of which three are unproved; the safety of a real test of labor, and the greater freedom from abdominal hernia. Cornell has given in a previous paper (5*) what he considers the only two disadvantages of this operation, the requirement of greater operative skill and a more detailed knowledge of the anatomy of the pregnant woman.

In a discussion by DeLee (6) of the results following the performance of the low operation in 330 cases at the Chicago Lying-in Hospital certain interesting comparisons are made. During the same period, there were 136 classical operations performed by the same surgeons, presumably upon cases se-

lected as clean and relatively good risks. In the 330 low operations, there were two deaths and in the 136 classical there were seven deaths,—a maternal mortality of less than 2-3 of 1% as against over 5% in favor of the low operation. From such a source, these figures must certainly be accepted as most impressive, if not as absolutely conclusive of the relative merits of the two operations.

It is felt that a brief glance at the technic of the Kroenig operation will immediately convince any surgeon, who is trained in abdominal and pelvic surgery, that this procedure offers no great technical difficulties. It is indeed somewhat more difficult than the classical operation, but only in minor details. The abdomen is opened by a medium incision, extending from the umbilicus to the symphysis. The uterine peritoneum is opened by a somewhat curvilinear transverse incision about two centimeters below its firm attachment to the uterus. The bladder is then separated from the cervix by finger dissection and the same procedure followed with the upper flap, except that knife or scissors may be necessary along the mid-line. The upper and lower limits of the cervical incision are then determined and steadied by Allis forceps; a small nick is made at the upper angle, and the incision is completed with the special knife devised by DeLee, by a large tonsil knife, or by bandage scissors. Hemorrhage from the uterine sinuses may be controlled by tongue forceps or the Rubowitz angular clamps. If the membranes have not been ruptured, they are now opened, the spill being controlled by large sponges or a suction apparatus. In occiput anterior positions, the head is rotated and extracted with short forceps. The uterus is closed in layers, care being taken to close the fascia separately. The upper uterine peritoneal flap is brought down and sutured, the bladder flap being overlapped and sutured to the upper flap. The abdomen is closed according to the preference of the operator. There is one detail of Hirst's technic that may be advantageously employed in suspected cases. The edges of the parietal and visceral peritoneum are sutured together before opening the cervix, thus extra-peritonealizing the operation. At the close of the operation these suture lines may be partly united and a drain run directly to the uterine wound. This is a further protection against peritoneal soiling in case infection develops.

In conclusion, it is desired to emphasize certain points.

1. Abdominal delivery, as generally practiced, carries with it a maternal mortality of from 3% to 14%, depending upon the time in

labor at which delivery is effected. (Polak & Beck, 7).

2. In 330 low operations at the Chicago Lying-in Hospital, the maternal mortality was less than 2-3 of 1%.

3. The low, or cervical, operation offers definite anatomical and technical advantages over the classical abdominal hysterotomy.

4. The low, or cervical operation offers no insuperable difficulties to one accustomed to abdomino-pelvic surgery.

5. With lowered maternal morbidity and mortality, and with a relatively simple operative technic, it is incumbent upon the surgeon who ventures upon the abdominal route of delivery to familiarize himself with the technic of the low operation and to use it, at least in potentially infected cases.

It is desired to submit a brief resume of the histories of seven patients delivered by this technic during the past eighteen months. The cases are not entirely consecutive, as there have been two or three delivered by the classical operation, during the same period, for various reasons.

1. J. M. G. colored. I-gravida. Ward patient. Admitted to Good Samaritan Hospital in labor. In labor more than 48 hours. Generally contracted pelvis. Delivered by celio-trachelotomy 3-18-25. Temperature above 100 degrees for six days immediately following delivery. Maximum temperature above 103 degrees. Subsequent recovery uneventful.

2. Mrs. G. K. Multigravida Private patient, St. Joseph's Hospital. History of having lost two children following difficult instrumental deliveries. Duration of labor 17 hours. Large baby (9 lbs.). Delivered by celio-trachelotomy 5-29-25. Temperature above 100 degrees for four days. Maximum temperature 101.4 degrees. The temperature elevation in this case was due to an acute exacerbation of an old cholecystitis. Recovery was otherwise uneventful.

3. B. M. Colored. I-gravida. Ward patient. Admitted to Good Samaritan Hospital in labor. In Hospital more than nineteen hours. Generally contracted pelvis. Delivered by celio-trachelotomy 6-4-25. Temperature more than 100 degrees first three days post-partum. Maximum temperature 101 degrees. Puerperium otherwise uneventful.

4. Mrs. R. C. I-gravida. Consultation with Dr. Anderson of Midway. Duration of labor 57 hours. Elderly primigravida. Large baby (8 lb. 10 oz.) Inefficient contractions. Slightly contracted pelvis. Delivered by celio-trachelotomy, at St. Joseph's Hospital, 8-1-25. Temperature 99.8 degrees, or greater, for five days. Urinary and blood pressure evidences of nephritic toxemia. Puerperium otherwise uneventful.

5. Mrs. J. H. I-gravida. Private. Out-of-town patient, admitted to St. Joseph's Hospital about two weeks ante-partum, with history of no previous prenatal care. Duration of labor 49 hours. Dystocia of undetermined origin. Delivered by celio-trachelotomy 8-29-25. Temperature 100 degrees or greater for ten days. Maximum temperature 101 degrees. Puerperium otherwise uneventful.

6. B. T. Colored. II-gravida. Ward patient. Admitted to Good Samaritan Hospital in labor. In Hospital twelve hours. Classical celio-hysterotomy by Dr. Redmon in previous labor. Generally contracted pelvis. Delivered of twins by celio-trachelotomy 3-27-26. Temperature more than 100 degrees for three days. Maximum temperature 101 degrees. Puerperium otherwise uneventful.

7. Mrs. C. B. G. I-gravida. Private. Duration of labor more than 25 hours. Second stage more than 5 hours, with non-engagement. Breech presentation. Delivered by celio-trachelotomy at St. Joseph's Hospital 9-3-26. Temperature greater than 100 degrees first four days post-partum. Maximum temperature 101 degrees. Slight oozing of serum from point 4 cm. from lower angle of incision at first dressing, eight days post-operative. Puerperium otherwise uneventful.

With the exception of Cases No. 2 and No. 6, both of whom were multigravida, one with the history of losing previous children following difficult operative deliveries and the other with the history of previous abdominal delivery, these patients were given what might be termed a severe test of labor, the average duration of labor being about forty hours. The two exceptions were given a thorough test, though less severe. In all cases, there was a definite primary morbidity, although in nearly all cases the temperature had subsided by the time that a delivery infection would have been expected to declare itself. In no case was there evidence of intra-abdominal infection. The babies were all saved. In all, there was a marked absence of the distention and gas pains that are so distressing after the classical operation.

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DISCUSSIONS

W. T. McConnell, Louisville: In selecting a procedure in Cesarean section there are three things to consider; first, the immediate safety to the mother; second, immediate safety to the child; and third, the remote safety to the mother.

Since this low or cervical operation has been given to the public, there is no question that the deaths from infection following operation have been lessened. It gives us a means of approach to this difficult and hazardous procedure which heretofore we didn't have. There are a great many cases, however, where we feel sure that the woman is not infected, nor would become infected afterwards, where at the time of operation, through exhaustion, her condition is such that the degree of shock she would sustain would perhaps sway us to the high operation. The cervical or low operation requires more time; it requires, as the essayist has pointed out, more skill. Your woman is under anesthetic a good deal longer before the baby is delivered, thereby more completely anesthetizing your baby, and the resultant shock to the mother is often greater by this longer and more difficult technic.

Those are the main things to be considered when the couchier is confronted with making a decision as to which method he should employ.

Where we have a clean case and the woman is not in best condition from fatigue, the high operation appeals to me as being the operation of choice. Where we have a potentially infected case and the woman is in good condition, the operation from below is the operation of choice.

There is one danger not mentioned by the essayist that we must consider, and that is, you are more likely to get hemorrhage from the lower segment than the upper. The arteries that come in there are more closely allied to that section of the uterus. Where we have a rupture of the uterus, we usually get it through the lower segment. That is a point to be borne in mind in the selection of this operation.

Scott D. Breckinridge, Lexington (in closing): I don't think there is much to add to Dr. McConnell's remarks. He has emphasized the importance of the time element. I think DeLee has answered this contention. The mortality for the 136 done under the high operation was five per cent. Of course DeLee advocates a local anesthetic.

Dr. McConnell suggests that we use a low operation in frankly infected cases and the high in clean cases. Frankly infected cases are not place for the low operation. The uterus should be removed in these cases. The low operation is indicated in clean and potentially infected cases. If you suspect infection employ the Hirst technique and drainage instituted at the time. If you feel sure you will have infection, the uterus should not be left in place.

I don't know what to say about the question of hemorrhage. I can't conceive any very great danger from hemorrhage from either operation in the hands of a competent surgeon. One is working in an absolutely exposed, open field, theoretically knowing what he is doing, and

with the transperitoneal I don't see how he could get threatening hemorrhage. Of course, with the extra-peritoneal, which I obviated in my paper as being too difficult for the average man, he might get hemorrhage.

HYPERTENSION, ITS SIGNIFICANCE AND MANAGEMENT.*

By B. S. RUTHERFORD, Bowling Green.

To understand intelligently the management and significance of Hypertension necessitates a knowledge of the anatomical structure and physiological functions of the parts engaged in this process. The arteries are supplied with circular, elastic, muscular fibres which continue in their course to the smallest arterioles. They have the power of contraction and expansion, and are presided over by two opposing sets of nerve fibres; the vasoconstrictors and vaso dilators, which act automatically, enabling the arteries to send a greater or less amount of blood to an organ or organs as the necessity may require.

The arterial system is a series of closed tubes of diminishing caliber beginning at the aorta, which is closed at the cardiac end during diastole by the aortic valve, and is opened by pressure from within the heart during systole by the oncoming blood. They are closed at the other extremity by the capillaries which yield to interarterial tension, allowing this system to be flooded with blood, loaded with the elements of nutrition and combustion, at which point these elements are given off in the process of metabolism and the product of catabolism is taken on for elimination.

Considering the arterial system as a series of closed tubes, we find that as the heart beats, the blood is pumped into the arteries and its return to the heart is prevented by closure of the aortic valve during diastole. As it passes to the capillaries and when it reaches this system, it meets resistance, this causes the pressure to rise in the arteries, and brings into action the normal tone of the arterial walls.

Blood pressure will reach normal and be maintained at this point when as much blood passes through the capillaries during a heart cycle as enters the aorta during systole. At this time the power of the heart is exactly balanced by the factors of the volume in the arteries, its viscosity and vasomotor tone. Tonus or blood-pressure is the amount of tension existing within the arterial system, which is largely controlled by the factors just mentioned, the most important of which is vasomotor tone. This is maintained through a re-

flex mechanism, and has for its purpose, the maintenance of normal blood-pressure, in spite of temporary alteration in peripheral resistance. This system has the power to regulate the amount of blood reaching any part of the body, according to the demand of the organs or tissues. Without the aid of blood-pressure the heart could not propel the blood through the system and would soon wear itself out in its ineffectual effort to do so. A man of twenty years of age should have a systolic blood pressure of 120 with a permissible variation of fifteen degrees above or below. Anywhere between these limits would be considered normal. A man of forty-five years of age, allowing one half of a degree for each year over twenty and adding this to 120 would give him a normal blood-pressure of about 132, with the same permissible variation as the man of twenty.

The question might be asked why the difference in men of these ages. The cause may be easily understood. The man of forty-five has lost some of the resiliency of his arterial walls; the blood meets with greater resistance; normal tonus is impaired. The energy lost by a deficit on the part of the arteries in propelling the blood through the system, has to be supplied by a greater amount of energy on the part of the heart; this it does by undergoing a state of compensatory hypertrophy.

It matters not how well the man of forty-five may feel, nor how well he is preserved; he may be able to undergo an enormous amount of physical exertion without disfigurement to himself. But when put to a crucial test of physical endurance he would be found wanting. The man of forty-five can not compete successfully with the man of twenty or twenty-five in a pugilistic contest as he has lost a part of his cardiac reserve. In fact, though he may be unaware, senility has already begun to manifest its ravages; a condition he cannot prevent, but the progress of which he can greatly retard.

We see too many men and women die with every evidence of premature senility at the ages of sixty, sixty-five and seventy where the same individuals might have reached extreme old age, had they begun earlier in life to have taken an annual inventory of their physical condition and avoided in every way possible, such errors that are conducive to bringing about and developing this condition.

Hypertension may be found at any age and may be produced by various causes. It is beyond the scope of this paper to discuss it as it is variously manifested; hence we will discuss it as it is most frequently found in declining years, when the machinery of life begins to need repair. At this time the arteries have begun to harden and lose some of

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their elasticity; normal tonus is impaired; the arteries continue to harden and lose more and more of their power of contraction and expansion. The heart being deprived of a part of its auxiliary force in propelling the blood through the system, is called upon to do a greater amount of work, it not only has to supply its usual amount of energy, but the added amount lost by the arteries because of their diseased condition.

A patient never lives long enough to lose all the power of expansion and contraction of his arteries, for in that case all tonus would be abolished and there would be no arterial tension, a condition that would be incompatible to life. It has been authentically stated that an individual cannot survive a systolic pressure below forty-five degrees. As a consequence of increased action of the heart we have a rising blood pressure and a compensatory hypertrophy, both of which are physiological, for without the increased strength and size of the heart it could not meet the extra demand, and without an increase in blood pressure the blood could not be passed through the capillaries.

As the condition of the arteries grows worse the demand upon the heart becomes greater. There ultimately comes a time in the history of the case when the heart, because of overwork perhaps over a period of years, can no longer meet the demand. Compensation ceases to supply additional energy, the cardiac reserve is gone, and dilation ensues. We may find at this time a murmur of relative insufficiency, with regurgitation of blood pass perfectly normal valves that fail to close the orifices because of dilation that has occurred in the process of decompensation. Long before this condition has been reached, however, the patient usually has developed an interstitial nephritis. We usually find on examination of the urine a low specific gravity, with or without albumen or casts. It is sometime impossible to determine which is the primary affection, the arteries or the kidneys. Either is conducive to the development of the other and they go hand in hand forming a clinical picture of cardio vascular renal disease.

The most important part of the management of these cases, as is the case with all diseases is prophylaxis and should be begun long before the disease makes its appearance. Children should be taught in their schools anatomy and physiology that they may understand the complexity and delicacy of the human organism in order that they may better comprehend its susceptibility to abuses to which it is too often subjected.

When we are called upon to treat an individual at or past middle age with a blood pressure higher than normal, we should warn

but not frighten him of his condition. We should give him to understand that the matter is largely in his own hands as to whether he will die of premature senility or live to extreme old age. We should familiarize ourselves in every detail as to the patient's method of living and render our advice according to the knowledge thus obtained. If we find him to be a man who has been in the mad rush of commercial life, to the extent that he has disregarded all laws of recreation and rest, we should advise him to curtail his activities but not retire from business, for the worry from enforced idleness would defeat the purpose that we might hope to accomplish. Do not take a man from his business and tell him to walk eight or ten miles each day in order that he gets the proper amount of exercise for the reduction of bloodpressure; the walking would soon become monotonous and his mind would dwell upon his condition to the extent that the worry would become a factor in perpetuating the condition instead of relieving it. The same amount of exercise taken in moderation in some gainful pursuit of business will go much further in securing a tranquil state of mind and disposition which is very essential.

Even in advanced life, if the individual's mentality is well preserved, it is better for him to retain some connection with his former interests with occasional or frequent diversion in the way of any hobby that he might choose, than to relinquish all responsibility. He should be impressed with the importance of regular habits, avoiding all dissipation and securing the proper amount of sleep which is one of nature's greatest restorers.

As the disease advances we will have occasion to treat various symptoms, many of them yielding for a time very satisfactorily to proper medicinal measures. We are taught that in as much as hypertension is the effort of nature to propel blood under increased difficulties to tissues which are clamoring for their adequate supply, the pressure should not be reduced to below 160 or 170 systolic, and that the vasodilators are seldom if ever indicated. This I believe in a measure is true, yet the nitrites are sometimes indicated, and can be administered with the assurance of obtaining satisfactory results.

Let us observe a man with a systolic pressure of 240 or 250, with a high diastolic pressure and marked cerebral symptoms which have failed to respond to the treatment outlined. We are confronted with an emergency which if not met will in all probability result in the near future in sudden death or a hopeless paralytic. The nitrites in these cases will usually reduce quickly the blood pressure, and relieve in a measure cardiac strain,

and enable the heart to regain some of its lost reserve.

It has been my observation that the reduction of diastolic pressure is relatively greater than the systolic, showing conclusively that cardiac strain has been reduced. This treatment should be persisted in until the threatening symptoms have passed and blood pressure manifests a tendency to remain below a dangerous height. This plan of treatment is only to meet a dangerous emergency and should be withheld as soon as the desired results have been obtained.

Because of the degenerated condition of the myocardium in advanced cases, it is not unusual for patients to have attacks of auricular fibrillation, which owing to the rapidity of the heart's action in its already enfeebled condition may lead to a fatal termination if not relieved. We have in digitalis a remedy which will frequently relieve this condition and restore the heart's action to its normal rhythm. In auricular fibrillation, the sino-auricular node fails to send out any excitatory impulse to promote ventricular contraction, the ventricles are responding to ectopic impulses supplied at rapid and irregular intervals by isolated foci; the auricles stand in a state of trembling diastolic failing to contract. Digitalis by its inhibitory effect will silence the ectopic impulses and by its stimulating effect on the myocardium induce the sino-auricular node to resume its function. Heart block may make its appearance either complete or incomplete, which in my opinion is much harder to control than auricular fibrillation.

I recently had a patient with cardiovascular renal disease seventy-two years of age with a systolic pressure of 190 who developed complete heart block which failed to yield to any treatment I gave. She lived several weeks with a pulse rate from twenty to twenty-five per minute. Digitalis because of its tendency to slow the heart beats, of course, would be contraindicated, unless the patient was threatened with heart failure; in that case we are advised to give it, as the only harm it could do would be to convert an incomplete into a complete block.

Belladonna is indicated in heart block because of its tendency to remove inhibition. With inhibition removed the acceleratory fibres no longer impeded by this factor would have full sway in its action upon the sino-auricular node in increasing the rate. The treatment is more successful where the block is produced by other causes than by myocardial degeneration.

In the course of our treatment of those patients especially in the advanced cases cardiac decompensation gradually develops which

usually leads in time to a fatal termination. Fortunately we have in digitalis a remedy, if the myocardial degeneration is not too far advanced, which can be administered with satisfactory results. Even in far advanced cases where we seemingly have cause to abandon all hopes of improvement the tired and over-worked heart will at times again respond to treatment and rest. Diastole will be prolonged and the fractional part of a second's rest thus obtained during these periods will sometimes restore in a slight degree compensation and greatly add to the patients comfort and prolong his life. While we cannot cure arteriosclerosis, we can retard its progress if we can have the cooperation of the patient thereby keeping within reasonable bounds hypertension and combatting this and other dangerous symptoms as they arise.

In conclusion I wish to emphasize the fact that hypertension is not a disease but a symptom, and is really a physiological process of a pathological condition; the effort of nature to supply the system with its adequate amount of blood; a task rendered more difficult by increased peripheral resistance because of the diseased condition of the arteries.

This being true, the vasodilators are seldom indicated, as they would defeat the purpose nature is endeavoring to accomplish. They should only be given when the tension remains persistently and exceedingly high. Under such conditions, they may prevent cerebral hemorrhage and its dreadful consequences.

Our treatment in the main should be directed to the cause by way of prevention, and retarding the progress of the disease. However, as the disease advances symptoms and complications will occur which will require our attention, and if judiciously treated, a great deal can be accomplished in rendering the patient more comfortable and prolonging his existence.

Incidentally I wish to state that the gravity and prognosis can not always be determined by the height of arterial tension. I remember several years ago to have examined a man, 65 years of age whose systolic tension registered 300, this was as high as my instrument registered. I do not know how much higher it would have gone. My prognosis at the time was grave. I expected him to die at any time, and at best could not live but a few months. The patient lived ten years, dying at the age of 75 of cerebral hemorrhage, during which time his systolic pressure was seldom as low as 250.

Dr. F. D. Reardon, one of the leading physicians of Bowling Green, told a few days ago that seven years ago he examined a man 62 years of age, whose blood pressure was 300 or

more, since which time he has enjoyed good health, thought nothing of walking ten or twelve miles and did manual labor. The last time he heard from him was a few weeks ago, at which time he was in jail in an adjoining county for bootlegging whisky.

Dr. J. W. Stephens of Nashville, informed me about ten days ago that he had recently examined a patient who had a systolic blood pressure of 300, whose condition was seemingly not near so grave as the height of the tension would lead one to suppose.

DISCUSSIONS.

J. T. Reddick, Paducah: I had the pleasure of listening to this very excellent paper of Dr. Rutherford. I think it should not go by without some discussion.

Hypertension is always an interesting and important subject coming before our medical association. I do not believe that it at all times has the significance that we thought it had a few years ago when we were first prepared to measure the arterial pressure. I think there are a great many cases of hypertension that may go along with the proper advice of the physician to the patient for many years. The most significant cases are those connected with that syndrome, the renal cardiac vascular syndrome. When the kidneys are involved then it becomes of more importance.

There are many causes, as the essayist has said, for hypertension. The intensive professional and business life, the cares of motherhood, as is evidenced often in hypertension of those women who have borne many children and are in the menopause, who have the troubles incident to the rearing of families, are causes of hypertension.

I heard a physician sometime ago say that renal involvement and hypertension always went together. I know that is not true. I have seen many cases of hypertension that went on for years without a renal involvement.

Perhaps one of the most dangerous or significant conditions is an increased diastolic pressure where the systolic pressure runs up to 160, 170, 175 or 180, and the diastolic 110 or 112 or 120. I think those are the cases that are more serious, but many of those cases can be carried on for years with the advice of the physician to his patient to quit business as far as possible, to take things easy, to live a simple life, to refrain from the use of alcoholics, tobacco, coffee, and excessive meat eating, and put himself in an attitude where he can go along leisurely: those cases can go along for many years.

I am in entire accord with the views of the essayist. As I said, I think it is too important a subject to pass by without some discussion.

B. S. Rutherford, Bowling Green (in closing): I just want to emphasize what the doctor said

in regard to the cases not all being cardiovascular-renal. At one time we thought almost every case of high blood pressure if cardiovascular also involved the kidneys.

I had a case die very recently of a man seventy-three years old; specific gravity was never lower than 1,020, there were never any casts or albumin. This man had the cardiovascular disease and died of this trouble without any involvement of the kidney at any time.

APPENDICITIS IN CHILDREN; WITH ESPECIAL REFERENCE TO THE IMPORTANCE OF EARLY DIAGNOSIS.*

By CHARLES A. VANCE, A. M., M. D., F. A. C. S., Lexington.

The subject of appendicitis in children has gradually become of increasing interest and importance during recent years. Prior to the last two decades, the opinion seemed to prevail that the disease was quite rare in young subjects, a view now known to be fallacious.

In this paper I shall refer particularly to appendicitis as observed during the first decade of life. Previous writers have included children of all ages, from birth to adolescence. My principal reason for not considering older children is that, in those beyond the age of ten years, the disease exhibits only slight clinical variations in type from that seen in adults. In younger children greater clinical differences are noted.

INCIDENCE.

It is undoubted that appendicitis has occurred in infants and children from the earliest ages. In the olden times, however, the nature of the disease was unrecognized, and fatalities were erroneously attributed to so-called "locked bowels," intestinal obstruction, inflammation of the "bowels," idiopathic peritonitis, etc.

The incidence of appendicitis in childhood is probably no greater now than one hundred years ago; that is to say, the apparent increase in the number of cases reported is explained by the fact that the disease no longer escapes recognition. Grouping the cases of appendicitis in individuals of all ages, approximately twelve per cent occur during the first decade, and about two per cent in infants under two years.

In more than sixteen thousand cases collected by Kelley, between two and three per cent occurred in the first five years, and over eight per cent in the next five year period. In the series of eight hundred and eighty-eight cases mentioned by Bolling, the percentages were three and one-half and eight and one-half respectively for the two periods named.

Of fifty-three cases in children reported by Helmholtz, fifteen were five years or under; in Muller and Ravdin's series of fifty-eight cases, it is stated that over thirty-four per cent occurred during the first decade; and forty-nine per cent of Alexander's youthful patients were from six to ten years old.

From late in 1916 to June, 1924, there were admitted to Bellevue Hospital, New York, forty-three cases of appendicitis in children less than five years old, the youngest being twenty months. In the third year there were ten cases, the fourth year nine, and the fifth year twenty-three. (Beekman.)

Gloniger successfully operated upon an infant forty-one hours old for acute appendicitis, this being the youngest case on record. Numerous cases have been reported during the first and second years, and the incidence increases *pari passu* as age advances.

While it is well known that approximately one-half of all cases of appendicitis are encountered during the first two decades of life, it will be noted that no age is entirely exempt. The disease is more common during the first three years of life than formerly believed. The preponderance of males over females is almost two to one.

SYMPTOMS.

Anatomically the vermiform appendix has no definite or fixed position, and this is also true in young individuals. Its situation may be either iliac, paracecal, retrocecal, or pelvic; hence, the clinical signs produced by inflammatory reaction, quite naturally vary according to the difference in location.

When the appendix occupies the usual position in the right iliac fossa at the lower cecal extremity or adjacent thereto, the local signs should be distinct in that region; if behind the cecum, ileum and mesentery, the signs may be masked; if over the pelvic brim, the signs may be chiefly suprapubic or pelvic. These points are worth remembering when considering the clinical symptomatology.

While in the child the symptoms of appendicitis may be said to progress along similar lines as in the adult, certain essential differences are commonly noted. Mild or severe pain is nearly always the initial sign, at first umbilical or diffuse, later usually becoming localized according to the situation of the appendix. However, when the patient is first observed, pain may be intense or absent, depending upon the stage to which the disease has then advanced. Nausea and vomiting followed by anorexia are the next indicative signs. These appear soon after the onset of pain in the majority of instances. Of more importance, however, is early localized tenderness, the site of which may approximately indicate the position of the inflamed appen-

dix. Localized muscular rigidity is seldom present in the early stages, and is frequently absent even after the disease has advanced to the stage of perforation and abscess formation. More or less abdominal distension is present early in the attack and usually increases.

Experience has shown that the temperature range is an unimportant factor in the appendicitis of children, except as it may assist in excluding other affections. During the early stages the temperature may be very high. On the other hand, it may be normal after the appendix has become gangrenous and abscess formation has supervened. The pulse rate likewise means little during the early stages of the disease.

One of the most significant clinical signs is a persistent, moderate leucocytosis (12,000 to 20,000) with a high percentage of polymorphonuclear cells (80 to 95 per cent). Therefore, a careful total and differential leucocyte count should always be made.

In the appendicitis of adults, marked localized muscular rigidity is practically always present. In children it is slight or absent, and when present may be noted in situations other than the right lower abdominal quadrant. Moreover, the initial pain in adults is sudden, generally intense, and soon becomes localized. In children the onset may be more insidious, pain is more generally distributed, less intense, and localization is delayed. Cases have been reported in children where pain persisted in the hypogastric region and never became localized in the right iliac fossa. Again, in children, vomiting does not necessarily suggest appendicitis, since it may be due to many other causes.

DIAGNOSIS.

In every case of appendicitis, whether the patient be adult or infant, the importance of early diagnosis cannot be overestimated. In very young children, however, the diagnosis is not always easy, and may be delayed for the following reasons:

(1) A physician may not be consulted until several hours—or it may be days—after onset of the attack, the mother in the interim administering purgatives, enemas, and other household remedies.

(2) The family physician who is then summoned may misinterpret the symptoms, and believing the pain, vomiting and fever to be attributable to gastro-intestinal disturbances, again administers purgatives and palliative measures are continued.

(3) By the time the little patient is referred to the surgeon, or is admitted to the hospital, the disease has progressed to the stage of gangrene, perforation and abscess formation; the diagnosis is then plainly ap-

parent, but it may be too late to save the life of the child.

In the presence of typical clinical manifestations of appendicitis, regardless of what may be the age of the individual, there should be no difficulty in making a correct diagnosis. However, in very young subjects the requisite diagnostic data may be unobtainable by either careful physical examination of the patient and parents; and furthermore in some instances the clinical signs may be so vague or atypical that a diagnosis cannot be made in the early stage of the disease. As a result of diagnostic confusion, operation has been performed for supposed appendicitis in the presence of pneumonia, pleurisy, typhoid fever, renal and ureteral lesions, intussusception, obstruction, diverticulitis, etc.

Physical examination of a seriously ill child is often quite unsatisfactory, because the patient can neither understand what is required nor co-operate with the physician, and as a consequence the information obtained may be misleading. Moreover, in the appendicitis of children the early symptoms may so closely simulate those due to other and more common intra-abdominal affections, and more rarely respiratory and renal diseases, that diagnostic confusion is sometimes unavoidable.

As a general proposition it may be stated that any previously healthy child who suddenly develops abdominal pain, nausea and vomiting, with a definite tenderness in the right lower abdominal quadrant, and at the same time has a total leucocyte count between 12,000 and 20,000, and a polymorphonuclear percentage of from 75% to 90%, even if the pulse and temperature be normal, is most likely suffering from appendicitis. "If there be no tenderness elicited on pressing over the right iliac fossa or right pelvic brim, and none on the right side of the pelvis by rectal examination, appendicitis may be fairly excluded." Palpation of the pelvic area through the rectum is a very important factor in the diagnosis and should not be omitted in any case where appendicitis is suspected.

The importance of the following symptom-sequence, first emphasized by Murphy, should not be overlooked:

- (1) Pain, usually epigastric or umbilical.
- (2) Nausea and vomiting.
- (3) Local iliac tenderness.
- (4) Fever, and
- (5) Leucocytosis.

In his commentaries Murphy remarked: "The symptoms occur almost without exception in that order, and when that order varies I always question the diagnosis."

By obtaining an accurate history prior to

the onset of pain, by careful physical examination and interpretation of symptoms occurring during the attack, and by giving due consideration to the order in which the manifestations appeared—not forgetting the importance of the leucocyte count—I believe the margin of error in the diagnosis of appendicitis of children can be reduced to a negligible minimum. While it is quite possible, in any case, that the child has had previous attacks, a reliable history of them is seldom obtainable.

In the differential diagnosis the following affections must be eliminated or excluded:

- (1) So-called "gastro-intestinal upsets";
- (2) Pneumonia;
- (3) Renal lesions, including pyelitis;
- (4) Intussusception and intestinal obstruction;
- (5) Typhoid fever;
- (6) Spinal and hip disease.

The differential diagnosis should not be especially difficult to the practical and experienced observer, provided sufficient care be given to consideration of: (a) the physical examination, (b) the interpretation of clinical symptoms, (c) the history, and (d) the findings obtained by laboratory investigations.

In the order of their frequency the four principal disorders which must be differentiated from appendicitis are:

- (1) The ordinary gastro-intestinal disturbances; which are so common in young children and in which the symptoms may closely resemble those seen in the early stages of appendicitis
- (2) Pneumonia, in which the initial symptom may be right iliac pain.
- (3) Renal lesions, especially pyelitis, which is not uncommon in children.
- (4) Intestinal obstruction, particularly due to intussusception.

Gastro-intestinal disturbances: The younger the child the more likely are the symptoms to be due to digestive disorders rather than appendicitis. The pain generally develops less suddenly and remains diffuse throughout the attack. The symptoms usually promptly subside after vomiting and evacuation of the intestinal contents, whereas the converse is ordinarily true in appendicitis. During the period of pain the pulse rate and temperature range will be found considerably higher than in early appendicitis, and the blood picture remains normal. Upon abdominal palpation and rectal examination no localized tenderness is detected after the pain has subsided. There is no anorexia after the cessation of vomiting, such as occurs in appendicitis. Moreover, in so-called "gastro-intestinal upsets," many of which are due to

the increased presence of acetone in the system, the attack is of brief duration; but in exceptional cases may persist for several days, and it is in the latter type that mistakes in diagnosis are likely to be made.

Pneumonia: Not infrequently in children the onset of pneumonia is marked by right-sided dominal pain, at least it is there the child locates the site of discomfort. It is always important, therefore, to carefully examine the chest in every case. By keeping in mind the essential variations in the clinical course of the two diseases, differentiation should not be difficult.

In pneumonia the initial manifestation is a severe chill, the temperature range, respiratory and pulse-rates, and also the leucocyte counts, are much higher than in appendicitis. Vomiting seldom occurs in the early stages of pneumonia. In appendicitis the conditions are exactly reversed. Local signs of pulmonary involvement can ordinarily be demonstrated by physical examination. In any case where doubt persists, it may be readily dispelled by laboratory investigations and roentgen-ray examination of the chest.

Renal lesions: Right-sided pyelitis is the most important renal affection to be differentiated. Pyelitis is rather common in children, especially in females, in whom fortunately appendicitis is less frequently encountered than in males.

The pain produced by renal lesions is on a higher level than in appendicitis, and is not often accompanied by other symptoms identical with those present in the latter disease. The child complains principally of renal pain which may radiate downward along the ureter toward the urinary bladder.

Differentiation from appendicitis can as a rule be made by urinalysis which discloses an abundance of pus in the urine. Rarely does the urine contain pus in appendicitis. Cystoscopy and ureteral catheterization are not resorted to very often in children.

Intestinal obstruction: Acute intestinal obstruction in infants more often than otherwise owes its origin to intussusception. This most frequently occurs during the first two years of life when appendicitis is relatively rare.

As the common site of intussusception is the ileocecal region, and pain the early characteristic symptom, occasional diagnostic confusion is not surprising. However, consideration of the history, the physical signs, and the difference in clinical course, should render differentiation from appendicitis easy.

In intussusception fever is absent, pain is periodic rather than constant, the stools are scanty and contain blood and mucus, and the classical "sausage-shaped" tumor finally

becomes manifest, unless it may happen that the diagnosis is perfected before that stage is reached.

TREATMENT.

The question of treatment of appendicitis admits of no debate nor controversy. It is primarily and essentially surgical, and operation is demanded as soon as the diagnosis is made. Aside from details of minor significance, the technique of surgical procedure has been standardized. In my opinion, instead of the median or the classical McBurney incision, the Kammerer incision or the right rectus incision, is to be preferred. The latter permits greater exposure and better view of the operative area.

If operation is performed prior to perforation, drainage is unnecessary. In the majority of cases of appendicitis in children, for the reasons already stated, the disease has progressed to the stage of perforation and localized peritonitis before the patient is seen by the surgeon. Under such circumstances, adequate provision for drainage must be made.

In a very large percentage of the children with appendicitis that have come under my personal observation, the disease had advanced to the stage of perforation and abscess formation prior to operation. I believe that has also been the experience of other surgeons.

In desperate cases it is probably advisable to first open and drain the abscess then remove the appendix secondarily, although I always try to locate and remove the appendix primarily unless to do so would result in injury to the patient.

In appendectomy upon youthful subjects, the question of anesthesia is particularly important. In children less than five years old my preference is ether, the least possible amount of the drug being administered consistent with completion of the surgical work, and always given by an expert anesthetist when one is available. In older children I have recently been using ethylene gas with oxygen, and have this far been much pleased with the results. Under this form of narcosis there is no so-called "anesthetic shock" the physical condition and appearance of the patient seem to be uninfluenced throughout the operation, and there have been no unpleasant after-effects.

The post-operative care in children differs in no essential respects from that applicable to adults. Proctoclysis, hypodermoclysis, or venoclysis, with saline and glucose solution may be advantageously employed. Gastric lavage is useful if post-operative vomiting persists. Abdominal distension is relieved by the administration of pituitary extract and repeated enemas. Morphine and codeine may

be given for the alleviation of pain when required.

The little patient is encouraged to drink an abundance of water, and fruit juices with sugar are allowed *ad libitum* as soon as vomiting ceases. A liquid diet is maintained for the first day or two after operation; a cathartic is given on the fourth or fifth day then soft foods are given in sufficient quantities to provide proper nourishment.

The death-rate hitherto prevailing in the appendicitis of children has been notoriously and I believe unnecessarily high. Two important factors which tend to increase the mortality are (1) delay not only in recognition of the disease, but also in the necessity for immediate surgical intervention, and (2) the repeated administration of purgative drugs during the period of diagnostic uncertainty. Death occurs as the result of perforation, increasing acidosis, and progressive peritonitis. Apparently the younger the patient the more rapidly do these destructive processes extend.

It is my firm conviction that, other things being equal, by early diagnosis, prompt operation and proper after-care, the death rate from appendicitis in children should be no greater than in adults. The idea that children are unfavorable surgical risks has long since been refuted.

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Results with Watkins Operation.—Forty-five out of forty-eight patients of whom Brady performed the Watkins operation were completely relieved of all symptoms of procidentia and had no return of the condition. Two patients were not completely relieved of all their symptoms, but on re-examination showed no evidence of procidentia. In one instance, the only known failure in the series, after ten years, the patient began to have further trouble, and a cystocele developed.

THE ANESTHETIC OF CHOICE IN OBSTETRICS.*

By J. T. REDDICK, Paducah.

Having been asked by our secretary to prepare a paper for this meeting on "The Anesthetic of Choice in Obstetrics," I desire to say that I feel complimented, and, while I am sure I can not bring you anything new on this subject, I always feel that I may succeed in getting something new in the discussions in our society.

I have been doing obstetrical work for more than forty-six years. When I began practice, anesthetics as a branch was not taught; it was not the custom to use anesthetics in obstetric practice except in operative obstetrics. The first ten years of my practice was country, horseback practice and anesthesia was used only a few times. I became convinced that it was the duty of the obstetrician to carry the parturient woman over the valley of her suffering on a soft couch of unconsciousness, so far as practicable, without detriment to her or her baby, and during the past thirty-six years I have used anesthesia in practically all of my cases.

Chloroform and ether have been the anesthetics most in general use all these years, but in recent years other methods have been introduced and have had their advocates. Extensive and important investigations have been made in the large medical centers, regarding spinal analgesia by the use of novocain, the amelioration of labor pains by morphin-magnesium sulphate and colonic ether instillation, "twilight sleep" ethylene-oxygen, and other methods, so far as they affected uterine muscular contractions, susceptibility to hemorrhage, etc, etc.

The ideal anesthetic is one which will abolish consciousness and pain without endangering life or produce unpleasant after effects.

The most popular anesthetics are ether and chloroform, and when obstetrical operations are to be performed it makes very little difference which is employed, as it is well known that the dangers incident to chloroform are markedly reduced at the time of labor and that only a very few deaths have followed its use under such circumstances. Exactly why the parturient woman should enjoy this immunity is a question which has not yet been definitely settled, but it is nevertheless a fact which is fully established.

When required for no other purpose than to mitigate the suffering of the patient, anesthesia should be reserved until the second stage, and even then may be withheld so long

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as the pains are well borne. Their employment is permissible at an earlier period when required to subdue great nervousness and excitement or to relieve pain of extreme and unusual severity. In fact, I know that anesthesia is desirable and advantageous in the latter part of the first stage when the pains are unusually hard, where there is a degree of cervical rigidity and the patient is wearing herself out. The pain is relieved to a great extent, relaxation takes place, rigidity diminishes and good is done. A good strong dose of morphine and atropine is very efficient in these cases also.

Morphine should not be given in large doses in the second stage of labor, experience showing that the fetus is more apt to be narcotized and rendered incapable of establishing respiration after delivery.

Chloroform is preferable in normal labor, for by its use obstetrical anesthesia can be rapidly produced, whereas, ether, owing to its slow action does not lend itself so readily to that method of employment.

LATE ACCIDENTS IN CHLOROFORM ANESTHESIA.

A few cases of the bad effects of the administration of chloroform have been reported which occur from one to several days after its use. In these observations it has been noticeable that there were important alterations in the liver and kidneys. It may be that there was a congenital weak condition of the liver or that the chloroform finished the possibility of reaction in an already diseased kidney. There may have been an accumulation of chloroform in the system. The clinical symptoms in these cases of delayed chloroform poisoning are a nervous state beginning with headache and vomiting, painful and distressing to the patient. The patient becomes terrified, excited, has distressing epileptic crises, respiration becomes irregular, of Cheyne-Stokers type, auscultation shows rales and signs of congestion, the pulse is rapid and thready, urine diminishes and is full of albumin, and the scene ends with coma.

Ethylene is one of the newer anesthetics, and I am very enthusiastic about it as a general anesthetic and have been using it in my surgical work. I have the distinction of having used it the first time it was used in Paducah, (Oct. 1st, 1924) being administered by Dr. W. T. Dowdall, anesthetist in the Illinois Central Hospital. To me ethylene oxygen appears to be as near an ideal anesthetic as we have found, but not applicable in obstetric practice outside of hospitals, on account of certain requirements for its proper administration. A few explosions have attended its use and it requires a rather cumbersome apparatus for its administration. It is recommended that care should be taken

that the floors of the operating room are not electrified, that there is a continuous metallic contact from the patient's mask to the machine, and that the machine itself is grounded to a water pipe or radiator.

Ethylene-oxygen was used in the Presbyterian Hospital, Chicago, 215 times last year with very satisfactory results.

Dr. Joseph B. DeLee reports he has had no explosions. Two patients had convulsions on the table—probably impure gas—and in all, the tendency to bleed was greater than under ether, and much greater than with local anesthesia. One baby delivered by forceps bled from a scratch on the scalp, so profusely that sutures and pack were required; so evidently the hemorrhagic qualities conferred on the blood are transmitted to the child in utero. Post partum bleeding was more or less increased in all cases and fine repair work on the perineum was somewhat hampered. He said, we have the machine, (a water filtering one) and the patient grounded, and, near the entrance door to the operating room we have a grounded plate which all who enter the room are required to touch to discharge any "static" they may be carrying on the body.

Now, in conclusion, allow me to say briefly that chloroform is my choice of anesthetics in obstetrical practice, and state a few reasons for taking this position. When I began the practice, chloroform was the anesthetic all over the South. I learned to use it, it has served me well. I have used it in the neighborhood of two thousand times in puerperal cases. I have never had a death of a mother or her baby attributable to its use. I have never had a case of delayed or secondary chloroform poisoning. I have found very few women who could not take it or would not beg for it once having had it. I have used it in practically all obstetrical complications. I have used it in the various types of eclampsia and cases of toxæmia, and, just here I may say that perhaps I am subjecting myself to scientific criticism in the matter of using it in these toxæmic cases as I am well aware that now we are taught different.

Chloroform does not require any expensive apparatus for its administration. An Es-march mask or even a pocket handkerchief will suffice. Chloroform is quicker in its action, more pleasant to take, easy to carry, and rarely causes nausea and vomiting.

DISCUSSIONS

B. S. Rutherford, Bowling Green: I am surprised to hear as young a looking man as Reddick say he has been practicing forty-six years. I have been practicing forty-one. I wonder if I look as young as he does. Eighteen years of that time I practiced in the country and was largely thrown on my own resources. I have

given time and time again, a great many times, in fact, chloroform without any assistant, and delivered with forceps. I have never seen any accident in confinement due to the administration of chloroform. I believe they enjoy an immunity not possessed by other patients.

My preference is chloroform.

William B. Doherty, Louisville: I have been practicing medicine fifty-four years and I never give anything else but chloroform. I make it a point not to give it until the end of the second stage. I believe the proper thing is to give chloroform, to take the sharp, keen edge off the last few pains. I have never seen any trouble come from it, nor have I ever seen a woman die from exhaustion in labor. I believe chloroform when given during the pain, but not in the absence of the pain just as forceps is used during a pain, not in the absence of pain, if we possibly can do so, is the proper procedure.

I believe that we are going too far in the use of those remedies that weaken humanity, and we usually find the woman from the moment she is in labor until the end, begs for something to relieve her pain. If we give chloroform at the beginning or even at the end of the first stage, in all probability we will be compelled to continue it until the end of labor. Is that right? I think it is a very dangerous procedure. Why not give the woman plenty of rest in the first stage of labor, by morphine in small doses, so that she can go through the second stage of labor refreshed and strengthened for the trying ordeal lessened without danger by the proper use of chloroform.

C. K. Wallace, Frankfort: I have only a few words to say because there are a number of gentlemen here who have had a great deal of experience along this line. I particularly want to endorse Dr. Reddick's remarks about chloroform. In a practice of fifty-five years I have used it almost constantly, and I feel that it is under most all circumstances my best assistant. I use the drop method invariably, and I find there is no danger of overcoming the patient if you do that. Forty to fifty drops, going around in a circle over the patient's nose, is all that you need in the majority of cases. I rarely use ether nowadays.

I must say that a few years ago there was quite a controversy between physicians of different portions of the United States as to which was the most advisable, chloroform or ether, but I have made it a rule that unless there is some peculiar circumstance, I use chloroform altogether. I do not know now that I have ever lost a patient from the abuse of chloroform.

L. T. Minish, Frankfort: The point I want to stress most is the one just brought out by Dr. Tallant. The danger of giving chloroform in hospitals. I have had twenty-seven years of practice and have used chloroform exclusively

in the home cases but in the hospitals where most of my obstetrics is now done, I use ether. With all due respect to the present day training of nurses they know but little about the administration of chloroform and we haven't an intern in our hospital, so we have to rely upon the nurses to assist in giving anesthetics.

The only near fatality from the use of chloroform I have ever seen was in the hospital while trusting the administration to a nurse. After that experience I decided to use ether, which I have continued to do.

Walker Gossett, Louisville: I have enjoyed Dr. Reddick's paper very much. The first paper I ever presented before the Kentucky State Medical Association was read at Georgetown on the subject of "Chloroform in Labor." I believe there is absolutely no danger from chloroform administered during the second stage of labor and especially in the perineal stage. Prior to 1914 I used nothing but chloroform. In 1914 I began the use of nitrous oxide gas in obstetrical work. It is realized, of course, that the administration of gas may be impossible in the country and even in the smaller towns owing to lack of facilities and expert anesthetists. I would not consider using gas unless it could be given by an expert anesthetist. There is nothing to compare with nitrous oxide gas for use in obstetrical cases. It is the best anesthetic known for this class of work when the one who gives it understands the technical details of its administration.

Davis, of Chicago, is using nitrous oxide gas almost exclusively in his obstetrical practice, and both he and Danforth say it is the one thing yet thoroughly tested which will relieve the pains of labor without at the same time diminishing the force of uterine contractions, and that they have found no theoretical nor clinical evidence to indicate that a properly given gas analgesia or short anesthesia,—even several hours,—carries with it any danger to the mother or the baby.

I use gas in 95 per cent of my obstetrical cases, and the more I use it the better I like it. It reduces the duration of the second stage of labor at least one-third and I believe 50 per cent would be nearer correct. So soon as the cervix is about three-fourths dilated,—I do not wait for full dilatation,—the anesthetist is summoned and the administration of gas is started. I keep the patient in bed during the first stage of labor. She is not allowed to do any "pulling," nor to leave the bed and walk about and thus tire herself, so that she is not exhausted when the second stage of labor is reached. I tell her to hold her breath and thus assist the uterine contraction, then in the delivery room she takes three or four whiffs of gas and is instructed to "bear down," thus using the abdominal muscles to assist the uterine contractions. This plan

will reduce the duration of the second stage of labor nearly 50 per cent.

I have delivered many women under nitrous oxide gas who told me afterward that they were not entirely unconscious, that they understood every word I said, that they heard me talking about retracting the perineum, etc, and said they were surprised that they suffered no pain, that there was merely a sensation of pressure but no actual pain.

In the matter of anesthesia in labor cases, I believe there are but two choices: (1) nitrous oxide gas, and (2) chloroform. When circumstances preclude the administration of gas, then chloroform should be used; but if the patient is in the hospital and there is available anyone who understands the administration of nitrous oxide gas, this agent should always be used. After you once try it, you will continue using it. I am very enthusiastic about it. I use it in 95 per cent of my obstetrical cases, and it is wonderful. Under this plan the second stage of labor is markedly reduced and an easy delivery is assured. Shortly after being returned to their private rooms, many of the patients ask for something to eat, and after sleeping five or six hours they feel so well that they want to go home. They are not exhausted by labor when gas is used, because the reserve force has not been drawn upon nor reduced, and milk appears promptly in the breasts. The patient is in excellent condition when she returns to her room, and after a few hours sleep she hardly realizes that she has had a baby.

S. J. Smock, LaGrange: I have been practicing medicine a long while, and I have used chloroform a good many years. I never pay much attention to the stages of labor in which to use chloroform. You have to use it, of course, in different amounts.

You go to see a primipara in labor: she has been in labor for some time; she doesn't understand things and she thinks she is suffering excruciating pain. You get there and maybe it is the first stage of labor. She says, "Doctor, can't you do something? I am going to die." If you tell her no, that there can't be anything done she is disappointed. She thinks, "Well, if that is all the doctor can do I might just as well not have him." Tell her yes, that you can do something, you are going to do something, and you are going to relieve her and help her. Give her a quarter of a grain of morphine with 150 of atropin. There is a little instrument I have by which they take the chloroform themselves. They inhale it in the nostril and you give it to the patient and say, "When the pain comes on you inhale this, it will relieve you a great deal." She does it and it does relieve her some. She thinks you have done something and she thinks you are trying to relieve her and it helps her a lot.

Of course as labor proceeds and goes along until the latter part of the third stage I try to get them to the surgical point. There are lots of women who never know when they have their babies. You can do that. You don't always have assistants, but you have to use some woman in the neighborhood to help you out; you can't possibly give the chloroform yourself, but you can put it on the mask and the woman can get through. If you do that you can get her to the surgical stage in the last part of labor when the head is coming over the perineum.

J. T. Reddick, Paducah (in closing): I appreciate the fact that it seems to be the common consensus of opinion among the Kentucky doctors, at least those present who have discussed my paper, that chloroform is the anesthetic in labor. There is only one differing from that position and that is my friend Dr. Gossett, and he informed me last year that he was doing all of his obstetrical work in the hospital and that being the case he is prepared to have his gas administered by someone capable. He cannot take the cumbersome apparatus out into the country.

Most of the babies are born in the country anyway. The country women have a good many more babies than the city women, and it seems chloroform must be used there.

From 1880 to 1890 my practice was country practice; I was the only physician in the community. I was often ten miles or more from any other physician, and I was thrown entirely on my own resources. I had to work out my own salvation in these cases, and I learned to administer my anesthetic and do the work all at the same time. I have an intelligent, capable woman or nurse to drop the chloroform on the inhaler under my supervision. Seventy-five per cent of the women that I deliver I carry to complete unconsciousness in the last expulsive stage when the severe pains come and the head passes over the perineum, the most excruciating pain they have. I think it is the duty of the physicians to render the mothers all the assistance possible to carry them through this stressing ordeal with as little pain as possible.

Cholelithiasis Resembling Renal Disease.—The observations in the two cases reported by Corbett and Peirce bring out that there is a clinical type of cholelithiasis resembling renal disease, and that treatment of the cholelithiasis at once relieves the renal symptoms. The authors incline to the view of the chemical rather than the infective basis for gallstone formation. The gallstones might then be considered to be a cause rather than the effect of the cholecystitis.

GLAUCOMA.*

By T. LIGGETT BAILEY, Madisonville.

Realizing that but few of you are interested in the treatment of glaucoma for that comes wholly in the field of the oculist, but at the same time knowing the general practitioner sees many eye conditions for reference, I hope I can drive home a few points in diagnosis and differential diagnosis sufficiently deep that these cases may get proper treatment before degenerative changes have taken place, rendering relief practically impossible.

Glaucoma has been defined as increased intraocular tension plus the causes and results of such pressure. It is divided into two forms, primary, that is the congestive and the non-congestive types not in reality a disease, as claimed by some authorities, but a local expression of some systemic disorder.

Secondary glaucoma comprises that increase in intra-ocular tension as caused by trauma, post operative and localized inflammations as invade and block up the channel of exit of the ocular fluids, intra-ocular hemorrhages, and tumors as glioma and sarcoma.

Buphthalmus or infantile glaucoma is mentioned purely as an anatomic anomaly.

It is very easy to explain the symptoms of glaucoma from the elevation of tension but a more difficult task to explain the essential nature of the disease. Of all the theories that have been advanced no single one is satisfactory in every case. The intra-ocular tension is governed by the amount of the ocular fluids secreted by the blood vessels on one hand, and by the quantity of fluid which leaves the eye by the lymph spaces on the other. The most important path for the outflow is at the iris angle into the canal of Schlemm. Any disturbance of outflow of the ocular fluids through this canal that circumscribes the cornea will cause an increase of intra-ocular tension and every operative procedure that has been devised for its relief intends to establish sufficient outflow of fluids, thereby reducing the tension to a point where the pressure is not dangerous to the ocular structures. Instillation of miotics as eserine and pilocarpin contracts the pupil relieving the pressure at the iris angle enlarging the lymph spaces and allows a normal outflow.

Non-congestive, or glaucoma simplex often comes on so slowly the central vision is but little impaired, but the visual field so narrowed that the patient finds it difficult to walk except in familiar surroundings. Subjective symptoms of simple glaucoma since inflammatory attacks and pain are absent con-

sists almost exclusively of disturbance of vision, and the diagnosis must be made by taking the intra-ocular tension by palpation with the fingers or some form of tonometer, the ophthalmoscopic pictures of the fundus, that is, deep cupping of the optic nerve and taking the visual field.

Cataract may occur in an eye with glaucoma, or vice versa. For example, I saw an old lady in her home whose vision had been failing for several months; so with an ophthalmoscope with mirror using an oil lamp for reflected light, I made a diagnosis of cataract, overlooking glaucoma, if present at that time. I went into a rather lengthy explanation telling her what to expect and when vision reached a certain stage report for operation. I never saw her for some months when she came in for operation, and to my surprise when I made a more thorough examination in the office found her hopelessly blind from glaucoma. I learned from that case to advise all patients with lens changes to report at stated intervals for examination explaining the reason for having them do so.

Errors in refraction very often change rapidly in chronic glaucoma, and every patient who complains that they have to change their lenses frequently should be advised to consult an oculist. Glaucoma simplex must be differentiated from optic atrophy but will not go into details here for that is a question for the ophthalmic surgeon.

Acute inflammatory glaucoma may occur like "A ball from the clear sky", and the picture should never be forgotten. However, there is usually a history of ancient attacks of obscure vision, dull headaches, a halo around a light, and if examined during one of these slight attacks the pupil may be found to be moderately dilated, react poorly to light, the anterior chamber shallow, the cornea slightly steamy and anesthetic, central vision somewhat reduced and intra-ocular tension increased.

While an interne in an eastern eye and ear hospital I came home for a short visit and was called to see an old friend of mine who was having trouble with one eye. I found him in bed in a darkened room saying the night before without previous warning he developed severe pain in his left eye and in a very short time vision was reduced to large objects. There was nausea and vomiting. Upon examination the ocular conjunctiva was very red, more marked by a deep circumcorneal injection. Pupil widely dilated, cornea steamy, anesthetic, exhibiting a greenish reflex, and palpation with the finger tips gave a strong hardness. I inquired of his family physician who was present, if treatment had

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been instituted and to my surprise he stated he had been using atropine. Eserine was immediately substituted and he was advised to go immediately to an oculist. This man eventually developed absolute glaucoma and two years later came to me for relief from a very painful eye. On account of the atropic iris, enucleation seemed the only means of relief. Examination of the right eye the day before operation did not reveal slightest evidence of glaucoma, however, twenty-four hours after operation this eye developed acute glaucoma. I failed to use a miotic previous to operation; had I done so would have possibly prevented such an embarrassing situation. It eventually took an iridectomy to relieve the tension, and it has been ten years and this man still has useful vision.

I saw another patient with mature cataract who developed acute inflammatory glaucoma before date set for operation. Dr. Pfingst saw this man in consultation. I did an iridectomy that relieved the glaucoma and a month later removed the lens getting excellent vision.

I recently saw a man who was struck in the brow with the sharp end of a piece of wood making a punctured wound to the bone. There was some ecchymosis of the soft tissues around the eye with no apparent injury to the globe. In twenty-four hours he developed acute inflammatory glaucoma that iridectomy relieved and vision was eventually lost. I mention this case for I was unable to explain why he should develop glaucoma from such an injury, though there was surely some connection between the two.

I now come to the question of differential diagnosis. Acute glaucoma is most often mistaken by the inexperienced for iritis or conjunctivitis, and it is imperative that an accurate diagnosis be made before intelligent treatment can be instituted, especially in iritis and glaucoma for drugs in the one condition is absolutely contraindicated in the other.

In acute glaucoma I repeat, deep circumcorneal injection, pupil widely dilated with a greenish reflex and does not react to light. Cornea steamy and anesthetic, marked reduction of vision and increase in intra-ocular tension, even to a stony hardness.

Iritis has the circumcorneal redness but not often the deep purple of glaucoma. Photophobia and lacrymation marked, pupil contracted, reacts but feebly and possibly not at all to light, iris congested and discolored, cornea by close examination may show deposits on Descemet's membrane or even pus in lower part of anterior chamber; tension normal or slightly reduced, pupil under atropine may dilate irregularly, certain por-

tions being adherent to anterior lens leaving deposits when pulled loose as seen with the ophthalmoscope.

In conjunctivitis there are all degrees of injection and swelling of both the ocular and palpebral conjunctiva dependent upon the type of infection present. The redness, contrary to glaucoma and iritis becomes less marked toward the sclero-corneal junction. Iris normal in appearance, pupil regular and reacts normally to light and accommodation, intra-ocular tension not disturbed, and a discharge of pus or mucous pus from the eye gumming the lashes.

In conclusion, the tension should be taken on every eye presented for examination regardless of the age of the patient. I don't think it practical for the general man to become familiar with the tonometer, but he should practice taking the tension with his fingers, that is, the tips of the forefingers of each making alternate pressure on the closed lids comparing the tension with its fellow on his own eye.

The treatment of glaucoma is surgical and medical. In the non-congestive types miotics as eserine and pilocarpin may be used so long as the tension remains within normal limits with normal fluid and no reduction of central vision. There are those however, who believe every glaucomatous eye should be operated upon as soon as a diagnosis is made. Iridectomy, trephining, or some similar procedure dependent upon the experience of the surgeon.

In acute inflammatory glaucoma I think all agree that immediate iridectomy is the operation of choice. This be repeated, if tension is not reduced, eserine and pilocarpin in 1% sol. are the drugs usually relied upon to contract the pupil and reduce the tension.

Atropine is positively contraindicated in glaucoma dilating the pupil, closing the avenues of escape of fluid from the eye, thereby increasing the tension. Atropine, homatropine and cocaine, even for the removal of a foreign body should not be put in the eye without first having some knowledge of the tension. Cases of glaucoma are reported from such procedures. Just two weeks ago I had a colored man with a small corneal ulcer, iritis complicating, the margin of pupil adherent to lens capsule in two or three places. Atrophine was prescribed for use at home, also instilled when he was at my office. In three days he complained of severe pain and taking the tension with McLean instrument found it was 70. Eserine substituted immediately and in a comparative short time tension was reduced and pain relieved.

It remains to be seen what the future has in store for this eye.

I trust all of you will take the tension of an eye by palpation, apparently normal or inflamed, note the condition of the pupil before instilling a mydriotic.

CALCULUS ANURIA.*

By JOHN BATE, Louisville.

ETIOLOGY.

Calculus Anuria may be caused by slow destruction of the secreting tissues of the kidney with a late complete suppression from blockage; or it may be caused by relatively sudden blockage of the pelvis, ureter, or bladder by calculi. Between these two extremes there are many intermediate grades.

The great majority of cases are caused by unilateral calculi. Some observers believe that in some cases the resulting anuria is through reflex suppression of the secretion of the opposite kidney. Others, notably Legueu (1), believe this is not the case unless the unobstructed kidney is also diseased. Legueu believed that "Anuria does not occur except in patients who live with one kidney only." In the majority of cases there is either a congenital absence of one kidney, or one kidney is destroyed or functionally useless. In an analysis of thirty-six cases which were proved at necropsy, Legueu found that one of the two kidneys was absent in three cases, destroyed by stones in twenty, and the ureter was obliterated in six cases. In thirty cases in which operation was done, the functioning kidney was obstructed by calculi in the pelvis of the kidney in seven, and the ureter was blocked in twenty-three.

In a similar analysis of twenty-eight cases, Morris (2) found one kidney absent in six, atrophied in eight, destroyed by stones in eleven, destroyed by hydatid cyst in one, and enlarged in two cases.

Frank (3) has advanced clinical and experimental evidence to explain reflex Anuria:

First: From two to five days after ligation of a ureter, the tissues surrounding the kidney were oedematous, and the veins were enlarged.

Second: The unobstructed kidney became primarily intensely congested; this congestion being first arterial, then venous. Hypertrophy of this kidney followed in a relatively short time.

These observations were confirmed clinically, and seem to explain, in certain instances, failure of the unobstructed kidney to function. Likewise, the anuria occasionally fol-

lowing nephrectomy, may, in the absence of mechanical obstruction, find its explanation in the same causes.

Israel (4), and Kuster (5), believed a vasomotor constriction might be sufficient to cause reflex anuria. This is supported clinically by the oliguria and dysuria sometimes accompanying ureteral colic.

Hunner (6) has made the most recent contribution to this subject. He states emphatically, that "The so-called 'renorenal reflex' or reference of pain to the side opposite the one bearing a renal or ureteral stone may occur, but this phenomenon of bilateral pain or pain only in the side without calculus should suggest at once an examination for bilateral ureteral stricture."

"Reflex anuria, heretofore considered a nervous phenomenon, will likewise be found in most instances to be due to bilateral stricture, and to depend on actual physical changes in the narrowed areas of both ureters. . . ."

Mellon (7) argues in favor of reflex suppression, but his observations could be easily explained by the ureteral stricture hypothesis: A man with left sided hydronephrosis entered the hospital complaining of renoureteral colic on the right side which incapacitated him. Cystoscopic and roentgen-ray investigation revealed the side, of which he was complaining, to be normal, and the pyelogram showed on the opposite side hydronephrosis due to stricture at the uretero-pelvic junction. Mellon asks if this crossed condition is not due to a reno-renal reflex. He quotes another case, having a clinical diagnosis of calculus of one ureter, in which anuria of fifty-six hours followed bilateral catheterization of the ureters. He reasons that if such a slight disturbance as a five minute ureteral catheterization can so upset the normal action of the kidneys that they would stop secreting for more than two days, certainly with a gross pathological lesion of one kidney such as would occur if it were suddenly blocked off, the function of the second kidney could be disturbed sufficiently to stop its secreting. Nevertheless, he thinks the theory advanced by Frank seems to be most logical, i. e. that there is a congestion of the normal kidney which prevents its functioning.

Baynard (11) reports a case of stone in the right kidney with "reno-renal reflex anuria" of the left. An analysis of this case however shows that there was an undoubted infection with impairment of function of the left side.

In a series of fifty-six cases, Morris showed the calculi were in the upper part of the ureter in over half of the cases.

The condition is nearly twice as frequent in males as in females. The youngest patient

*Read before the Kentucky State Medical Association, Frankfort, September 21, 22, 23, 1926.

reported was two days, and the oldest eighty years.

FREQUENCY OF THE CONDITION.

A search through the cross index files of the Massachusetts General Hospital showed only four cases of Calculus Anuria listed. This is believed to be an imperfect record, however.

During the period from 1922 to 1918, eighty-six cases were diagnosed clinically as ureteral calculus. A large percentage of these were verified by x-ray, cystoscopy, or operation. Thirty-seven, or 43% of the eighty-six cases, were operated. Only one case of Calculus Anuria occurred among the eighty-six. This represents 1.1% of all the cases diagnosed ureteral calculus.

Caulk (8) has seen Anuria six times among two hundred and eighty personal cases of renal and ureteral stone.

Smith (9) has seen three cases of Calculus Anuria in his sixteen years of practice of urological surgery.

Previous to the publication of Watson's (10) paper, only 163 cases of Calculus Anuria had been reported. Watson added twenty-four from the literature and one of his own. Frank added five, making a total of 193. We are adding four from the records of the Massachusetts General Hospital, and thirty-nine from the literature since 1910, making 236.

SYMPTOMS.

Pain in the region of the kidney last involved is almost invariably experienced at the commencement of the suppression. It may continue for a long time, but more commonly lasts for a day or two and subsides. In very exceptional cases the Anuria has come on without pain on either side, and without history of previous attacks of renal colic; or the patient has forgotten on which side they occurred.

There may be frequency and urgency though the bladder is empty. If the obstruction is incomplete there may be intermittent polyuria.

The most striking feature of the disease is the occurrence of a silent or tolerant stage, followed by a uraemic stage. During the tolerant stage, the patient usually feels remarkably well, and is only slightly incapacitated. In the non-obstructive forms of urinary suppression, such as nephritis, the symptoms of uraemic poisoning followed by death would often seem too rapid to be explained simply by non-elimination of urinary excreta. Thus, the usual case of Calculus Anuria is sharply distinguished.

Only where a hydronephrosis existed before the onset of Anuria do we get continuous pain. Otherwise, as soon as the pressure of the urine in the pelvis is equal to the blood

pressure in the renal vessels, pain stops.

Blood pressure is usually raised slightly to moderately. If there is scanty urine it is only rarely albuminous, and specific gravity is usually below 1008. It may contain blood and epithelium, or findings from associated lesions.

When Anuria is complete, the uraemic state begins about the seventh or eighth day, though it is variable.

The pulse is slow, full, and later irregular.

Vomiting is nearly always present in the disease and is looked upon as a symptom of bad omen which accompanies and precedes the uraemic nervous phenomena.

Obstinate constipation and meteorism are commonly present.

When uraemia appears, complete depression of body and mind, with muscular tremors and contraction of the pupils are the dominant features. Rarely, delirium and hallucinations occur.

The respiration becomes slow, sighing and irregular, and the patient dies with symptoms of respiratory failure.

PROGNOSIS.

Death usually occurs at the eighth to tenth day when the case is treated expectantly. If suppression is interrupted by intermittent polyuria, life may be prolonged by many days. If the functioning kidney is hydronephrotic, the uraemia appears later. Rayer (12) reports a case in which Anuria lasted twenty-five days with only slight remission on the tenth day. James Russell (13) published a case of Anuria lasting twenty days which terminated by the discharge of ten liters of urine in twenty-four hours. Autopsy a year later showed bilateral hydronephrosis with Calculi. In a few reported cases the hydronephrotic tumor has disappeared coincidentally with cessation of Anuria.

Spontaneous cure sometimes occurs. Frank reported a case of a two year old child who recovered after seven and a half days of anuria, and passed a calculus on the fourteenth day.

In a series of thirty-nine cases collected from the literature since 1908, only the above case can be classified under purely expectant treatment. In a case having a congenital single kidney, exploratory operation was done, but the patient's condition forbade completing the operation. The patient died after twenty-eight days of Anuria. Heaton has reported a somewhat similar case, which ended in recovery: Operation on the left side, which was the site of the most recent pain, was unsuccessful in revealing kidney or ureter. On the eighth day twitchings made their appearance. A few hours later he began to

pass urine. Two months later he passed three small calculi.

If these two cases be classified under expectant treatment, the mortality would be only 33%. This is probably not an accurate index because these cases were reported on account of their unusual nature.

Of forty-eight cases not operated, collected by Morris, thirty-eight died, and 10 or 20.8% recovered. Of forty-nine cases operated, twenty-four died, and 25 or 51% recovered.

In Legueu's (14) series of fifty-six cases which neither followed nor were treated by operation, recovery took place in 16, or 28.5%. In one secretion recommenced on the third day; in ten, between the fifth and tenth days; in three on the thirteenth, fourteenth, and fifteenth days respectively.

Modern diagnosis, and early cystoscopic and operative treatment has influenced the prognosis favorably. In our collected series of thirty-nine cases, sixteen were treated cystoscopically, with one death—a mortality of 6.3%. The fatality occurred in a case having a single kidney.

Operation was performed in twenty-one cases with six deaths, a mortality of 28.5%.

Cystoscopy caused a sufficient improvement in two cases, to enable operation to be successfully performed later.

PATHOLOGY.

In only one published case has simultaneous obstruction of both ureters undoubtedly occurred. In one of the cases from the Massachusetts General Hospital, both ureters were obstructed by calculi in the lower third, but we cannot say definitely that they were obstructed simultaneously.

A large vesical calculus has been known to cause Anuria by obstructing both ureteral orifices.

Most writers agree that there is a pronounced and long-standing alteration in one kidney before the other, and functionally active organ, becomes obstructed. That this is not always true has been discussed under the etiology of this condition.

Most investigators report a primary hydronephrosis following complete ureteral obstruction. Barney (15) found this in thirty-two of thirty-three dogs with unilateral ligation of the ureters.

It would seem that simple retention of nitrogenous products does not explain many of the cases of rapid progress of the disease. Babington (16) showed that the retention of nitrogenous bodies is clearly related to kidney defects, and to the production of uraemia. At the present time, we have no adequate explanation to cover the symptoms of poisoning in all cases. The condition is due to a rather sudden complete retention of all

substances normally excreted by the kidney, in contrast to the more selective gradual retention in most cases of anuria from other causes.

Myers has advanced evidence to show that the tenacity of life in prolonged poisoning from anuria may possibly be explained by one or more of the following derangements of physiological processes:

1. In long standing anuria there may be a lowered metabolism.

2. In long standing anuria, natural protective forces develop a defense against the peril of deranged metabolism.

3. In long standing anuria, the nitrogenous products may be eliminated vicariously.

Hewlett (17), took large amounts of urea by mouth in an endeavor to determine the part played by urea in the production of asthenic symptoms. When the urea in the blood reached 100 mg. per 100 c. cm. asthenic symptoms set in.

Gotzel (18) produced total anuria experimentally by ligation of a single ureter in dogs having two kidneys presumably normal.

Caulk's (8) experience has not borne Gotzel's out, and he is convinced, after a long series of experiments on animals and from clinical observations that reflex anuria must be exceedingly rare. He has never observed it, and doubts its existence.

In 50% of Caulk's experiments where both ureters were ligated in dogs, the most extensive extravasation of blood throughout the kidney occurred as well as under the true capsule, and often out into the fatty capsule, with extensive areas of necrosis throughout the organ.

DIAGNOSIS.

Most writers give one the impression that there is always a period of tolerance in Calculus Anuria. The more recent case reports do not always bear this out. Five of Caulk's cases had acute toxic symptoms from the beginning of the anuria. Finkelstein's (19) case was semi-comatose in thirty-six hours, while Loree's case showed toxic symptoms before seventy-two hours. Three of the four cases from the Massachusetts General Hospital showed a definite period of tolerance, however, one lasting three and one six days.

In general, nephritic uraemia shows disturbances of the nervous system very early. Headache, giddiness and convulsions succeed each other. High blood pressure and changes in the retina are usually present.

Anuria due to drugs comes on more slowly and the history is suggestive.

In polycystic disease of the kidneys, tumor and high blood pressure are usually present.

In these and other conditions the roentgen-

ray examination and cystoscopic examination with waxed tipped catheter, are invaluable. However, the x-ray plates often fail to show the stones, or else the stones are overlooked.

In one of the Massachusetts General Hospital cases the x-ray report called attention to a stone in one ureter only. A review of the plate showed a stone 2.5 x 2 x 1 cm., in the same position on the opposite side.

TREATMENT.

Operation as late as the fourteenth day has been successful, while it has failed as early as the third day, and deaths have occurred in twenty-four hours without operation.

In the twenty-two operated cases collected by the writer, ureterotomy was performed twice, pyelotomy was performed five times, bilateral pyelotomy once, nephrotomy eleven times, and bilateral nephrotomy once. Decapsulation was performed once with a fatal ending. An explanatory operation, on a case having a congenital solitary kidney, failed to expose the kidney, and the patient succumbed twenty-eight days later.

Both the bilateral pyelotomy and bilateral nephrotomy cases, recovered.

All four cases from the Massachusetts General Hospital were operated; a simultaneous bilateral ureterotomy was performed in one case, a pyelotomy, followed later by a ureterotomy in another, and a nephrotomy in one, a right nephrotomy and a left pyelotomy in the other. All recovered.

The mortality of the operated cases in the collected series was 28%. This is an improvement over the mortality of 49% reported by Morris.

The mortality of 6.3% in the sixteen cases where cystoscopic treatment was possible is very encouraging. The combined mortality for this series is 17.9%.

Thevenot (27) reported two cases of his own and compiled reports of thirty-eight others in which ureteral catheterization was tried. His own and thirty-two of the compiled cases recovered.

Therefore, we conclude that our early diagnosis and treatment of these cases has improved our statistics markedly.

Huck's (20) thesis showed that intervention before the sixth day gave a mortality of 42.10%; before the fifth 30.76%; and before four days, 25%.

Watson (21) found the average period of tolerance in sixty-two cases was five to six days. In four it was twenty-four hours; in sixteen it was ten to sixteen days. Frank's case was twenty-two days. Eisendrath (27) believes that operation should be performed by the fourth day, catheterization of the ureters having failed to relieve the condition. Or,

(22) if the case has been seen early, one should not wait longer than forty-eight hours for the relief of anuria by ureteral catheterization. Nearly all observers believe that the fourth to fifth day is the limit of justifiable delay, but that in most cases there is no justification, at the present time, for operating upon these cases before a thorough urological study has been made of the location of the calculus and the condition of both kidneys.

In cases of acutely infected or non-infected hydronephrosis, conservative surgery is indicated. Many of these kidneys will regain a useful degree of function after an obstruction is removed.

Andre (23) believes that ureteral catheterization repeated on the catheter left in situ is a very efficacious means of obtaining the expulsion of ureteral calculi when they are no larger than a kidney bean to a date nut. Even if the calculus is not expelled, there is sufficient improvement to allow successful surgery later. If infection of the kidney of pelvis has occurred, the catheter should be left in place for repeated lavage of the pelvis. He reports some successfully treated cases in which the calculi were numerous and anuria recurred. In going through the literature I have been impressed by the high mortality from surgical treatment in these cases of recurring calculus anuria.

Paschkie (24) thinks that one should not wait longer than seventy-two hours, if secretion does not follow ureteral catheterization.

Albarran advised washing the ureter with a warm solution to relax the spasm and wash away gravel or force the stone back to the kidney pelvis.

Rochet (25) says simple ureteral catheterization has caused the expulsion of the calculus in five cases in his practice.

Crowell (26) has been successful in removing 140 ureteral calculi, with seven exceptions, by cystoscopic manipulations. He injects 66 c. cm. of 2 to 5% novocaine solution into the bladder, fifteen minutes before filling it with boric acid solution. If the patient is very nervous or extremely sensitive, he thinks it would be better to use spinal anesthesia. The catheter is then inserted into the ureter until it encounters resistance. A solution of novocaine is then injected and retained for ten minutes. The catheter will then pass the calculus in the majority of cases. Generally a 9 French Catheter will pass the calculus after a 6 French Catheter has been left in place for twenty-four hours. Before removing the catheter, he anaesthetises the ureter, and fills the pelvis of the kidney with warm saline and sterilized oil. In case this fails, the dilation should be continued. Unfortunately this method is only applicable in the earliest

stages of Calculus Anuria.

Special instruments for the removal or crushing of ureteral calculi have a definite place in the treatment of uncomplicated calculi. In most cases of anuria, relief of the suppression is the paramount indication, so such methods would rarely be indicated.

When more radical measures become indicated, we should operate on the side with the better function first. This is nearly always the side which was last affected, and usually shows the more acute symptoms. In the absence of a good history, physical examination must be relied on. Spasm or some rigidity of the abdominal muscles is frequently present on the side last involved.

If the obstruction cannot be readily found or removed, the operator should be content with drainage of the kidney by means of a pyelotomy or nephrotomy.

Watson (10) gives a clear exposition of the advantages that may sometimes be derived from simultaneous bilateral nephrolithotomy in calculus anuria. He thinks this should be the procedure in: First, all cases in which, upon cutting down upon the first kidney, it is found that there is not enough renal substance remaining to make it probable that the organ will be capable of sustaining life by the exercise of its function alone. The inference should always be that the greater the destruction in the kidney first operated upon the greater the possibility that the kidney of the other side has a useful amount of renal secreting substances in it, and correspondingly greater becomes the importance of immediately incising that kidney, in order that the patient may have at once the benefit of all the functionally capable renal substance that he possesses.

Secondly, simultaneous bilateral nephrolithotomy should be performed in all cases in which there is a simultaneous blocking of the ureter of both kidneys, or in which there is one ureter blocked and a calculus in the other kidney, it being always possible and fairly probable that the calculus in the second kidney, even though it is not at the moment blocking the ureter, may do so at any time subsequently.

Watson found six cases in the literature in which simultaneous bilateral nephrotomy was done with a mortality of 50%, and four cases in which a bilateral operation was done with an interval between. All four recovered. In the collected series being reported now, there was one bilateral nephrotomy and one bilateral pyelotomy, both recovering.

Anuria due to obstruction of a single kidney demands immediate operation, if ureteral catheterization is not successful in draining the kidney at once. This is more imper-

ative when infection is present because of the rapid destruction of the renal parenchyma from diffuse and multiple focal suppuration.

CASE REPORTS.

(1) M. C. P., a Portuguese housewife of fifty years, 271006 West Medical, and Urological Services, Massachusetts General Hospital, was admitted July 22, 1925, and discharged Aug. 29, 1925. Admission diagnosis: Anuria; question of chronic nephritis. Chief complaint: Has not passed water for two days. Present illness: This began five days ago with pain in the side and nausea and vomiting. She first noticed pain in the back on stooping three months ago. She dates onset of present illness to two months ago when she had an attack somewhat similar to the present one. She was suddenly seized with a chill followed by fever, and sweating and two or three chills. Nausea and vomiting lasted for one week. At this time she had a dull ache and tenderness in her kidney region. There was no lessening of the amount of urine, but there was some frequency and a moderate amount of burning. Also had aches and pains and tenderness in all her limbs. Was treated in bed by her physician for four weeks. Slight burning on urination, pain in the back and tenderness in the loins persisted up to the attack which came five days ago. Has lost considerable weight, but does not know how much.

Five days ago she was seized with nausea and vomiting. Since then she has vomited everything she has eaten. She is very weak and nervous. There is pain in the back when she stoops over, and tenderness over both kidneys, more marked on the right, and a dull ache in that region.

Physical examination: A well-developed, obese woman. Subcutaneous fat was suggestive of oedema. Heart borders obscured by a large amount of fat, but seems slightly enlarged. Sounds are of good quality, rate and rhythm. Abdomen is very full, raising the question of oedema of the wall. There is a question of oedema of the ankles. Blood pressure is systolic 155; Diastolic 90.

Laboratory data: Leukocytes 8700; polymorphonuclears 62%; lymphocytes 24; large mononuclears 3; eosinophiles none; basophiles 1. Hemoglobin 70%; 3,936,000—red cells are normal in size, shape and staining. Platelets appear slightly reduced. Blood Wassermann test is negative. Blood non-protein nitrogen is 83 mg. per 100 c.c.

Roentgen-ray examination: Kidney outlines are not clearly made out on either side because of respiratory motion. There is, however, on the left a shadow which may represent a very much enlarged kidney. At approximately the region of the brim of the

pelvis on the left is a dense triangular shadow which probably represents a calculus in the left ureter. Opaque catheter reaches one centimeter below this shadow. There is no opaque fluid in the ureter nor kidney pelvis on either side. There is a small amount in the bladder. The findings are those of left ureteral calculus.

Note:—Notwithstanding this report, a careful examination of the plates showed a shadow on the right overlying the sacroiliac joint, similar in size and shape to the one on the left.

Cystoscopic report: The bladder is normal in appearance and capacity. Left ureter obstructed at six centimeters from the vesica orifice. The right catheter is obstructed 10 centimeters from the orifice. There is no urinary drainage. The diagnosis is bilateral ureteral calculi causing obstructive Anuria.

Operation was performed July 24th, the morning of the fifth day of the anuria. Through a suprapubic, mid-line incision, the left ureter was exposed extraperitoneally, and the stone removed by ureterotomy. The same manœuvre was used successfully on the right side. Urine drained from both ureters immediately.

July 28th, non-protein nitrogen, 40 mg. per 100 cc. Uric acid, 3.4 mg. per 100 cc. This was four days after the operation.

Chemical analysis of the stones showed each calculus contained oxalate, phosphate, and carbonate.

August 22nd—Phenolphthalein test for functions (1 cc. given intravenously):

First hour—90 cc.—45% diluted to 1000 cc.

Second hour—150 cc.—10% diluted to 1000 cc.

August 27th—Nonprotein nitrogen 30 mg. per 100 cc.

Uric acid—3.7 mg. per 100 cc.

Aug. 28th—Blood-pressure is systolic 130, diastolic 85.

Aug. 29th—Discharged after an uneventful convalescence, though a prolonged one from sepsis in the wound.

CASE 2.

R., G. W. 222434, age 52, white male, single, admitted May 15, 1918 to Emergency Ward of Massachusetts General Hospital. Past History: A right sided nephrotomy for stone was done Jan. 31, 1918. A right nephrectomy was done nine days later because of profuse hemorrhage. Present illness: Patient entered the Emergency Ward having severe left lumbar pain. He had not voided for three days. Catheterized, but no urine obtained.

Physical examination: Left costovertebral tenderness is present. X-ray shows shadows in left kidney pelvis and lower end of left

ureter. Cystoscopy showed complete obstruction to the ureteral catheter 3 centimeters above the ureteral orifice. Patient voided seven ounces two hours after cystoscopic examination.

Operation: On the same day a left pyelotomy and nephrotomy were done under gas-oxygen anaesthesia.

June 6th—The nephrotomy drainage tube was removed.

June 20th—A right ureterotomy for stone was done.

July 20th—Discharged in good condition.

CASE 3.

J. H. P., Age 57, white male, admitted March 3rd, 1903. Present illness: About once a year for the last fifteen years he has had an attack of severe pain starting in the right lumbar region, and running down the right groin to the glans penis, accompanied by nausea, vomiting, bloody urine, and relieved by passing stones of various sizes, sometimes as large as a half inch in diameter. Two years ago he had an attack on the left side, and a similar one a few months later. During the last year his condition has become worse, averaging one attack a week. For the last three weeks he has had continual pain in the right lumbar region with nausea and vomiting. He has passed no stones, and has been unable to void except by dribbling. He complains of burning in the glans penis.

The pain is worse on jolting. There is no pain in the bladder region. Hematuria has accompanied the passing of stones, but has not been present at any other time. At times, there has been a sudden cessation of the stream while voiding.

Physical examination: The abdomen is exquisitely tender in the right lumbar region. There is dullness in the right flank. Elsewhere, the abdomen is soft, tympanitic, and not tender. There is a 20 French stricture of the anterior urethra. Searcher in the bladder showed no stones. One ounce of clear urine was evacuated.

X-ray examination was negative for calculi.

March 4th—Operation performed through the lumbar incision. The kidney was larger than two fists, dark in color, tense, and dotted with white spots. No calculus could be felt. The pelvis was explored with a finger, but nothing could be palpated. A rubber drainage tube was left in the pelvis of the kidney. The ureter was explored to the bladder without finding any obstruction. The kidney was then decapsulated.

He passed 900 cc. of urine during the remainder of the day, and 1500 cc. the next day.

On March 18th, a left sided ureteral colic occurred. Following this the bladder was

washed with a Bigelow evacuator. One small stone and two blood clots were removed.

On March 29th a stone 1 centimeter in diameter was removed by litholopaxy.

April 6th, a cystoscopic examination showed pus coming from the left ureter. Discharged.

A letter three years later reported him to be in perfect health.

CASE 4.

J. F. F., White male, age 27, 186395, East Surgical Service, Vol. 810, p. 252 a, admitted to the Massachusetts General Hospital on Dec. 5th, 1912.

Past history: "Tubercular pneumonia" three months before entrance. He inhaled a tooth twenty months ago, which lodged in a bronchus. He thinks he coughed it up eighteen months ago. During this time the sputum was blood-streaked. Has had five attacks of haemoptysis. The first one occurred seventeen months ago, and was most severe. Has not had night sweats. Present weight 141 pounds is his best weight.

Present illness. When a boy he was treated at the Boston Emergency Hospital for blood in the urine. Nine months ago, he had a sharp pain in the left kidney region for two days. Urine stopped once or twice during this time, and, on the second day he passed a stone. The pain has always been on the left side. Five months ago, he had another attack accompanied by vomiting. He passed a stone at this time. Five days ago he began to have sharp pains in the left side and down the course of the ureter into the penis. He has not passed any urine for four days. His appetite has failed and he vomits bile stained fluids constantly.

Physical examination: He is a well-developed and nourished, nervous and talkative man. Breath smells sweetish. Eye-lids are slightly puffy. There is dullness at the right apex above the third rib and in the back above the spine of the scapula. Breath sounds are broncho-vesicular. There is a soft systolic murmur heard best at the pulmonic area. There is tenderness in the left costovertebral region, and slight tenderness along the course of the left ureter.

Cystoscopic examination: Bladder capacity is 5 ounces. The right ureteral orifice is swollen and reddened. The left ureter is readily catheterized to the pelvis of the kidney with a moderate flow of clear urine. The right ureter could not be catheterized owing partly to mechanical difficulties of instrumentation, and partly to the pathological condition of the orifice. The patient was sent back to bed with the left ureteral catheter left in situ, but draining scantily.

X-ray report No. 21907: Stones are pres-

ent in the pelvis of the left kidney.

Diagnosis: Anuria due to calculus in right ureter, with reflex suppression of left kidney.

Operation: This was performed the day after admission, or the fifth day of the Anuria. Right kidney and ureter were exposed through a lumbar incision. The ureter was opened and found packed with caseous material. The kidney was small and lobular. A right nephrectomy was done. The left kidney was then exposed through a lumbar incision. The kidney was greatly enlarged, congested, and purple. The pelvis of the kidney was examined, but no stones were felt, except for a small one at the outlet. This slipped back into a renal calyx and was lost. A bougie was passed down the ureter to the bladder without difficulty. The kidney pelvis was drained with a catheter, and the incision closed.

Subsequent course: A month later an x-ray picture showed several shadows in the pelvis which suggested stone. There was also a question of a shadow in the left kidney region. The wound was still discharging urine. A second pyelotomy and nephrotomy was done, but no stones could be felt. The fistula healed and he was discharged a month later in good condition.

SUMMARY.

1. The greater number of cases of calculus anuria are caused by a calculus on one side, with a damaged or functionless kidney on the opposite side.

2. In the records of the Massachusetts General Hospital, this type of anuria represented 1.1% of all cases of ureteral calculus.

3. In this collected series of thirty-eight cases, sixteen were treated cystoscopically, with one death—a mortality of 6.3%. Operation was performed in twenty-one cases with six deaths, a mortality of 28%. It must be remembered that some of the cases treated surgically were unsuitable for cystoscopic treatment, however.

4. A number of the collected cases failed to show a period of tolerance to the disease.

5. The treatment is drainage by ureteral catheter where possible. When this fails, surgical drainage of the urine must be employed. The mortality increases progressively with the delay.

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DISCUSSIONS.

E. R. Palmer, Louisville: This most excellent paper should not be passed over without discussion. I don't feel myself able to do it justice. I know the Society will join with me in requesting our able President to lead in the discussion as he has been doing this kind of work for a great many years.

Irvin Abell, Louisville: The paper I think is of intense interest to anyone who has been interested in the surgery of the urinary tract. Personally I have seen but two cases of calculus anuria. Both of those occurred in somewhat similar conditions to those described by the essayist, one in a doctor whom many of you know, Dr. Harry Weber, who gave a history of unilateral orchidectomy for tuberculosis twenty years before. At the time I saw him he was in coma. He died shortly after, and the autopsy showed the left kidney to be represented by a very small mass of tissue presenting microscopically the characteristics of tuberculosis and very small microscopic amount of renal parenchyma. The right kidney was non-tuberculous and showed calculus obstruction of the ureter at the juncture with the pelvis.

The second instance that came under my care was a man with colic referable to his left kidney over a period of some months; he was x-rayed and no shadow detected. Cystoscopy showed bloody urine coming from the left ureter. We were unable to find the right ureteral orifice. In making a phthalein functional with the catheter in the left kidney, we obtained thirty per cent of the dye in fifteen minutes following intravenous injection, during which time no urine appeared in the bladder. Our conclusion was that we had a patient with but one the left kidney. Whether his right kidney was congenitally absent or what had happened to it we didn't know.

In view of the fact that the x-ray had not shown a stone, and that we were unable to demonstrate the right kidney, we suggested to him that he keep under observation. At the end of five or six days this man reappeared in the office with the statement that forty-eight hours previously he had had a severe pain referable to the left renal area, since which time he passed no urine. He felt perfectly well, mentally clear, and was evidently in the premonitory stage, which the essayist described. An x-ray did show the presence of a stone at the pelvic junction of the ureter with the pelvis. Removal of that stone very promptly cleared up the situation. He presented upon exposure the peculiar and intense renal congestion which has been described by the essayist.

Those represent the only two instances of calculus anuria which have come under my observation.

The essayist has pointed out, I think, the im-

portant facts for us to bear in mind, division into three stages, if you may, of calculus anuria, antedating that with a history of calculus disease, the calculus anuria beginning with the attack of colic, the colic always or practically always telling you which side is the active side.

If I may digress right here, in regard to the renal reflex, in a series of over 140 renal and ureteral calculi we have seen but one instance in which we believe that this renal ureteral reflex was present. A man who had had his left kidney removed some six years before in another city came under our observation for what he said was renal colic on the side in which he had no kidney. X-ray examination showed a small stone in the ureter of the nephrectomized side, with a rather large stone in the remaining kidney on the right side. It is inconceivable that a stone in the ureter of the nephrectomized side could be responsible for the pain on the left side. We removed the stone from the remaining kidney, the right one, and he has been since free of pain, now a period of five years.

If we may exclude then the reno-renal reflex, history of pain will invariably direct you to the side containing the kidney which retains its activity. Following the premonitory comes the tolerant stage during which they present no symptom whatever subjectively. They are perfectly comfortable as was the man whose history I have detailed to you. The one characteristic feature of this period is the absence of urine, yet if one depends upon its appearance for reassurance he is only awaiting the onset of a catastrophe, uraemia, which when manifested, means that it is oftentimes too late to give that patient any assurance of relief. As has been emphasized in the paper, such patients should at this particular period be given the advantage of taking all means of examination, the cystoscope, the catheter, the x-ray, the renal functional, and treat them directly according to the findings; if they are recognized at this particular time and given appropriate treatment the mortality is rather low. While I was unable to follow him in all of his important statistics, I feel rather confident that a study of those will show that if he will divide the cases into those three stages, the percentages of deaths will gradually increase with the number of hours that have elapsed since the onset of pain.

Calculi of Salivary Glands.—Twenty-seven cases of salivary calculus are reviewed by Harrison. The parotid gland was involved in three cases, the parotid duct in seven cases; the submaxillary gland in five cases, the duct in ten cases; the sublingual gland and duct, one case each. The use of the roentgen ray proved very valuable as a means of localizing the calculus.

BLOOD STREAM INFECTION: WITH SPECIAL REFERENCE TO THE ROLE PLAYED BY THE PNEUMOCOCCUS.*

By FRED L. KOONTZ, M. D., Louisville.

I know of no subject of greater interest for discussion than blood stream infection (so-called), especially since the advent of the various dyes, mercurochrome, etc. The latter has been used in the therapy of quite a variety of infections.

Inasmuch as my paper is based upon a recent case, I first wish to direct attention to a more or less detailed history of that case. Before reading the legends and notes from the hospital charts, I will speak briefly of the primary condition of the patient.

Mrs. E., aged thirty-seven years, married rather late in life. Five years thereafter she gave birth to her first child. The presentation was a persistent occipito-posterior. She was delivered with forceps after a long, hard labor and terrific lacerations of the soft parts. The child was resuscitated with difficulty, but died from cerebral hemorrhage after it had nursed at the breast.

After the death of her infant, the woman's mental condition became distinctly unfavorable. Her whole idea in life was to again become pregnant, because she realized that nothing short of offspring would satisfy her desires. Four months after the delivery of her child she was taken to the Baptist Hospital where the lacerations were properly repaired. The perineum was perfectly restored. On the left side, at the cervico-uterine junction, an extensive tear was repaired, and on the right side a laceration of minor importance was repaired at the same time. On the fifth day she had a severe hemorrhage from the larger laceration mentioned, a small portion of which remained ununited.

During the past summer she toured with her husband through the Eastern Atlantic States, returning to Louisville in August. She missed her menstrual periods in August, September and October. She was then nearly thirty-eight years of age. A tentative diagnosis of pregnancy was made. She showed some enlargement of the uterus, but there were absolutely no other signs of pregnancy.

The first week in November (1925) there was a slight hemorrhage from the uterus and she sent for me. I saw her at her home within a short time and advised her to remain in bed. The following morning examination showed that the laceration on the left side of the cervix, from which hemorrhage had previously occurred, had imperfectly united. High on the left side there was a small com-

*Read before the Jefferson County Medical Society.

munication extending through the uterine wall into the uterine cavity.

For thirty-six days the patient was kept in bed. During this entire period there was never a day that she did not have some hemorrhage from the opening mentioned. During this time there were absolutely no other symptoms. My tentative diagnosis was pregnancy with placental implantation over the opening and that was the cause of the hemorrhage. On account of the conditions present I advised that probably an accident of pregnancy might occur. I finally called Dr. Louis Frank in consultation, and after an examination he advised emptying the uterus.

About that time, which was December 7th, the patient complained of an extremely painful place on her right index finger which formed a blister. This was opened by her husband with a nail file and who applied tincture of iodine. There had at no time been any elevation of temperature, her appetite was normal, daily fecal evacuations occurred, and the patient appeared perfectly normal in every respect.

The finger became very painful, and within forty-eight hours the patient was again admitted to the Baptist Hospital. At this point I wish to present some of the legends from the hospital charts:

Patient admitted to hospital December 10th, 1925. The next day (December 11th) to dressing room for cervical packing. December 12th to operating room for curettage and repair. Returned from operating room at 1:45 P. M.; pulse 128. From 1:45 to 5:30 P. M. pulse 128, 120, 108; followed by chilly sensations; temperature 100.8° F.; chill lasted ten minutes; temperature reached 103.4° F.; severe headache from the start.

December 17th: Vaginal examination negative. Patient complains of chilly sensations and headache. Diet liberal and well tolerated. Capsule of quinine, caffeine and camphor for headache: she complains of ears ringing.

December 18th: Hot compresses to finger. Blood taken for culture. Temperature 104.° F., pulse 114, respiration 22. First emesis,—undigested food.

December 19th: Second specimen of blood to laboratory. Two sutures removed from cervix. Temperature 104.4° F., pulse 120, respiration 26. Pneumococcus reported in blood.

December 20th.: Temperature 100° F., pulse 100, respirations 26.

December 21st.: Physical examination by Dr. Virgil E. Simpson. Blood pressure 98-55; temperature 103.4° F., pulse 118, respirations 28. Mercurochrome 210 mg. intravenously in 30 cc.; chill for thirty minutes

followed by temperature 105.2° F., pulse 146, respirations 44. Patient vomited; no urine excreted. Vaginal examination negative.

December 23rd.: First involuntary defecation. Another specimen of blood taken for culture. Morphine administered. Temperature receded to 99.6° F., pulse 110, respirations 26.

December 25th.: Second injection of mercurochrome intravenously, 100 mg. in 20 cc. Hot compresses to finger.

December 26th.: Examination by Dr. Nettleroth and Dr. Farbach. Mercuric iodide 1 cc. intramuscularly. Temperature 102.6° F., pulse 118, respirations 26. Pneumococcus antibody suspension 50 c.c. administered subcutaneously. During the night temperature 102.6°, 103°, 104 F.

December 27th.: Emesis, large amount. Morning temperature 101° F., pulse 108, respirations 26. At 5:00 P. M. chill, followed by temperature 104.2°, pulse 110, respirations 28.

December 28th.: Patient complains of pain when turned on side. Vaginal examination negative; smears taken from cervix and uterus for examination and culture. Pneumococcus antibody suspension, 50 c.c., intravenously. Temperature 105° F., pulse 122, respirations 28.

December 29th.: Temperature 106° F., pulse 126, respirations 36, at 6:30 P. M.

December 30th.: Pneumococcus antibody suspension, 50 c.c., intravenously. Temperature 105° F., pulse 130, respirations 26.

December 31st.: Patient complains of pain in calf of right leg. Temperature 105° F., pulse 122, respirations 36. Blood taken for culture.

January 1st, 1926: Temperature 99.4° F., pulse 110, respirations 25, under antipyretics; shortly afterward temperature 98.6° F., pulse 108, respirations 24,—still under antipyretics. Chill of twenty minutes duration, nausea, emesis. Temperature 105.4° F., pulse 130, respirations 36. Diaphoresis profuse, difficulty noted in breathing. Calf of left leg measured 10 3-4 inches, right 12 inches. Quartz light over chest, abdomen and back, two minutes each. Mercurochrome 200 mg. intravenously preceded by morphine 1-6 grain; no reaction. Temperature 103.6° F., pulse 120, respirations 36. Strychnia sulphate every five hours with digitalis occasionally.

January 2nd.: Quartz light over chest, abdomen and back. Temperature 100.2° F., pulse 122, respirations 34.

January 3rd.: Calf left leg 10 1-2 inches, right 11 1-2 inches. Mustard plaster over right chest and liver region. During afternoon mercurochrome 150 mg. intravenously. Chill lasted for fifteen minutes; pulse very

weak. Temperature 102° F., pulse 120, respirations 36.

January 4th.: Emesis of bile. Several pimples in axilla filled with serum and pus. Involuntary defecation. Light over chest, abdomen and back. Temperature 100.6° F., pulse 108, respirations 22.

January 5th.: Profuse diaphoresis. Urine still highly colored with mercurochrome. Feces offensive for the first time. Temperature 99.4° F., pulse 104, respirations 30.

January 6th. Pain in right shoulder. Fecal evacuation formed and colorless, no odor. Temperature 103° F., pulse 120, respirations 30.

January 7th.: Morning temperature 103.2° F., pulse 120, respirations 32; later in the day receded to 99° F., 104, 32. Large amount of mucous in long shreds passed from rectum.

January 8th.: Chilly sensations. Mucous stool, very offensive. Temperature 103.6° F., pulse 120, respirations 32.

January 9th.: Cheyne-Stokes respiration when lying on back. Small pimple at end of spine. Pneumococcus antigen 1 c.c. subcutaneously. Slight tenderness to pressure over right iliac fossa. Chilly sensations. Temperature 102° F., pulse 120, respirations 30.

January 10th.: Iron arsenite with strychnine intramuscularly. Pneumococcus antigen 1 c.c. Temperature 104.2° F., pulse 126, respirations 36.

January 11th.: Iron arsenite with strychnine. Pneumococcus antigen 1 c.c. Temperature 101.8° F., pulse 120, respirations 32.

January 12th.: Blood taken for typing and matching by Dr. Allen. Patient very nervous. Nausea, emesis, complains of being chilly, urine cloudy. Blood transfusion 250 c.c. citrated. Chill followed lasting fifteen minutes. Temperature 105.4° F., pulse 134, respiration 38. Cheyne-Stokes respiration while on back.

January 13th.: Morning temperature 104° F., patient talking irrationally, emesis; unable to micturate. Glucose solution per rectum, retained 150 c.c. Evening temperature 98.6° F., pulse 98, respirations 24. Urine 2 1-2 ounces withdrawn by catheter.

January 14th.: Proctoclysis during the day of glucose and sodium bicarbonate. Temperature 103° F., pulse 128, respirations 36.

January 15th.: Patient very nervous and restless. Nuclein solution 4 c. c. subcutaneously. Talking irrationally. Involuntary defecation. Numoquin base grains 4 at 6:30 P. M. Nuclein solution 4 c.c. three hours later. At 11:30 P. M. numoquin base 5 grains. Temperature 103° F., pulse 120, respirations 36.

January 16th.: Nuclein solution 4 c. c. at

1:15 A. M. Numoquin base grains 5 at 4:30 A. M. Patient vomiting, more restless, involuntary defecation. Complains of soreness in legs. Temperature 104.6° F., pulse 128, respirations 36. At 5:30 P. M. blood transfusion 300 c. c. Slight chill, pulse very weak. Sodium hydroxide rubbed into scarified area of left leg. Temperature 99.6° F., pulse 102, respirations 30.

January 17th.: Skin very red. Urine color of blood. Temperature 105° F., pulse 130, respirations 36. Abdomen distended for the first time. Patient picking at nose constantly while awake.

January 18th.: Citrated iron and nuclein compound subcutaneously; glucose and sodium solution per rectum. Temperature 103° F., pulse 130, respirations 34. At 7:30 P. M. chill lasting five minutes. Patient very restless and weak, talking irrationally; urinary incontinence. Temperature 104.6° F., pulse 160, respirations 52.

January 19th.: At 10:30 A. M. hypodermoclysis left breast 500 c. c. At 12:00 M. hypodermoclysis right breast 500 c. c. Temperature 100.5° F., pulse 100, respirations 24. Trembling of lower lip, occasional sighing. At 9:30 P. M. gentian violet 20 c. c. of one per cent solution intravenously.

January 20th.: Patient complains of pain over heart; nauseated. Pulse 180 (?), respirations 64. From this time on the pulse could not be counted. Respirations receded as follows: 64, 36, 28, 20, 12. Urine ten ounces withdrawn by catheter. Condition very weak during the night. Temperature 106° F., respirations 48. At 2:20 A. M. respiration labored, fingers cyanosed. At 3:20 A. M. patient expired.

Out of the voluminous literature of blood stream infections comes veritable Arabian Nights entertainment, especially since the advent of the penetrating antiseptic dyes. Gentian violet and mercurochrome has brought forth a flood of brilliancy that is eclipsed only by the brilliancy of treated and unreported cases before the advent of the spectacular intravenous medication.

In all the voluminous literature covering the experimental work and the treated cases, I have found without exception that all therapeutic attacks and all experimental work has been directed against the pioneers in blood stream infection, i. e., the streptococcus and the staphylococcus. In not one single instance have I found in my limited opportunity for research reference to an experiment directed to a known, proven, typed pneumococcus blood stream infection.

The much heralded mercurochrome "220" has produced a flood of experimental and therapeutic work that will either prove or

disprove its efficiency. Sufficient data have already been produced to give us preliminary deductions.

From my reading I am inclined to think that the fairest estimate of the status is contained in the report of the Eli Lilly Research Fellowship of the Pathological Department of the Indiana University. All these experiments were based, however, on the staphylococcus septicemia in rabbits.

The entry of bacteria into the blood stream is a relatively frequent occurrence and in most cases is not attended by consequences of a serious character, at least not so far as immediate danger to life is concerned. Numerous clinical and experimental observations support the truth of this proposition. Ritchey obtained positive blood cultures from patients with chills following instrumentation of the urinary tract. It is a matter of common knowledge how frequently positive blood cultures are obtained from patients with various ailments, provided enough blood is drawn.

A patient with general septicemia will nearly always recover, even if very sick, provided his focus of infection is removed by drainage or amputation and provided he is not suffering from some debilitating disease. A healthy patient, with a general septicemia from a focus of infection which cannot be removed by drainage or amputation, will frequently recover, provided he survives the first few days of the infection.

Strictly speaking any agent known at the present time with the power to devitalize one form of protoplasm will, in sufficient concentration, divitalize others. Any drug, therefore, of greater bactericidal power will of necessity show some toxicity for tissue cells. Yet this phenomenon of selective toxicity, though ultimately quantitative is in many instances so striking as to appear qualitative in its selection. This phenomenon is demonstrated in the selective toxicity of gentian violet for gram-positive bacteria. Churchman (1912) demonstrated that 90 per cent of gram-positive organisms are unable to grow on mediums containing gentian violet, whereas gram-negative organisms grow luxuriantly on the same mediums. Churchman (1913) demonstrated further that gentian violet may be injected in large quantities into the blood stream of rabbits, the animals remaining alive and apparently uninjured with tissues stained blue. The blood of such an animal possesses an increased power to inhibit the growth of bacteria. This action, however, is demonstrable in the circulating blood for only a short time after the injection. At the end of one and three-fourths hours, it has disappeared entirely.

Mercurochrome is a dye preparation of an entirely different type. It is a powerful germicide for all types of bacteria, first evolved by Young and his associates in 1919. Under the name of mercurochrome 220 soluble, it first came into prominence as a genito-urinary antiseptic. In a dilution of 1:1,000 it kills bacillus coli and staphylococcus aureus in urine in one minute.

Gentian violet and mercurochrome, when injected in safe doses into the blood stream of rabbits with staphylococci septicemia, do not accomplish a *therapie sterilizans magna*.

A large dose of either drug injected in the presence of an overwhelming infection may hasten death.

Either drug, when properly employed, will exert a temporary bacteriostatic action in the blood stream. The ultimate benefit to be derived from this retardation of the infection depends on the resistive power of the animal.

These observations may be applied directly to the clinical use of gentian violet and mercurochrome intravenously. On this basis, a more rational conception of the therapeutic possibilities may be maintained.

Blood stream infection with the pneumococcus is another story from the blood poisoning of streptococcus and staphylococcus, another story with the same ending,—while the clinical course has some important differences. It reminds one of the "student who denied that the Iliad was written by Homer, but by another man of the same name."

The pneumococcus is the parvenue, the new comer, into the field. When cytogenetic—the literature is very meager. Osler, after investigating the subject, mentions - Wright, Stokes, Pearce, Flexner, and Hektoen. I wish to add Sir John Lumsden, of Dublin, who reports one case in the British Medical Journal, June, 1921. I personally have had two cases. Fifteen years ago I reported one such case to the Muldraugh Hill Medical Society. The cultures were made by Dr. Leon K. Baldauf who went with me at my invitation to Elizabethtown to substantiate the findings.

The question that arises in my mind often is: "Is it or not a misnomer?" I mean blood stream infection. Can there be a pure blood stream infection, per se, without either primary or secondary focal mobilization? My tentative answer is—yes—no.

It is not reasonable logic to my mind that organisms of variable virulency can live and grow in an actively hostile medium and there so persist as to become lethal, and yet the case in point reported in connection with this paper seems almost to prove it. When I speak of a hostile medium, I mean one that discourages and opposes, actively,—such is the blood. Were there a set, fixed or stable de-

gree of hostility, it might easily be worn down and attenuated by constant assault; but the hostility of the blood to bacterial invasion is not fixed, it is constantly kept in fighting trim by regenerative influx.

The opsonins, the index medicus maintained by the oxygenated corpuscle, the chemical constitution, the ever ready antigen factor in reserve, the whole patrolled and kept in order by the phagocytic police, makes for discouragement to an aggressive pyococcus, and yet: while cryptogenetic septicemia is not yet proven, my faith in universal focal distribution is shaken.

My firm belief, ever since I became acquainted with the pneumococcus in the role of the vagabond, has been that he played a progressive game, proceeding from focus to focus, each a distributing center from which periodic showers of bacteria, toxins and proteins were thrown into the blood for consumption or disposal. My observation of the pneumococcus conforms to this picture except: In the case of the streptococcus or staphylococcus, it is from finger to elbow, to axilla, or from toe to knee, to groin. This is the classic "triple play" of the original pyococci. This is not true of the pneumococcus ordinarily. From finger to middle or other portion of the forearm, to the elbow or above, or both, reaching the axilla late and only after terrific defense, and one or more peripheral storm centers, and with the strong probability that the axillary "Hindenburg line" will hold. This was the procedure in one of my cases. I have regarded the pneumococcus as peculiarly apt to early call forth a maximum effort of resistance.

It requires but thirty seconds for the blood to make the circuit of the body from the left heart, thus agglutrinations are whipped and clumping is whirled along to distal implantation. Under these dynamic conditions foothold is opposed only by the capillaries and the valves of the heart.

Dr. Pollock, Pathologist to Mercer Hospital, Dublin, makes this significant remark in reporting the pathologic findings of Sir John Lumsden's case: "The tendency of this organism in rich media to approximate a streptococcal type is, I think, noteworthy. During our recent epidemic of septic pneumonia this was frequently noted. In this case the organism appeared in long diplococcus chains while cultured in rich media, but in plating reduced to the characteristic diplococcus morphologically. Also, section of thrombus found in the right auricle post-mortem showed the characteristic lanceolate shaped diplococcus of pneumonia."

Truman Abbe says: "We acknowledge our inability to find the primary source of

infection by calling the case cryptogenetic." He claims further that the streptococcus is the offending organism as many times as all others combined.

All the recorded pathology that I have been able to find speaks of the disappearance of the red blood cell, and the hemoglobin content diminishing to twenty per cent and under. The picture of ordinary pyococcal septicemia is one of a sinking, vanishing, washed out, poverty stricken red blood cell. Day by day and week by week there is an increasing anemia until hemolysis is complete; but this does not conform to the picture of the blood in a pyo-pneumo-coccemia.

It is significant that the pneumococci which conform to types one and two are not found in the mouths of healthy individuals, and yet they are the only types that yield to specific sera. The pneumococcus is not found outside of the body. Types three and four are found in the mouth; types one and two only in the presence of pneumonia or intimate contact with pneumonia. How it may gain entrance and cause a general septicemia is almost inexplicable.

There is one phase of the subject which might give some insight into the persistence of a pneumococcus blood stream infection: When that same organism is specific and not under vagabondage, it is a self-limited disease. The part played by the albuminous capsule, this protective covering or shell interfering with the process of phagocytosis and, the mechanical interference with the enveloping blood platelet, may in a measure account for the persistence. It has been shown by competent authority that the organism is not encapsulated under all conditions and there is abundant evidence that there are other organisms, not ordinarily classed as encapsulated, which develop under certain conditions of defense and offense an exogenous albuminous coating.

No organism is intrinsically pathogenic. It depends upon the variable susceptibility of the host. No organism is constant as to its lethal point, but may develop an immunity to the toxins and antitoxins and antigens of the blood, just as the blood may acquire a certain tolerance for the invader,—the so-called reciprocal immunity. Outside of its specific action, the pneumococcus has been found to produce pseudomembranous inflammation, pleuritis, otitis, meningitis, empyema, and peri- and endocarditis.

The pneumococcus is particularly prone to induce thrombosis. In this infection we find enormous increases in the number of the blood platelets, which have been shown by Adams and others to play a significant role in thrombotic pathology. This increase in blood plate-

lets is not shown in streptococcus and staphylococcus infections to the same degree. Inasmuch as initial inoculum may start the intensifying process of virulency, each succeeding emboic transplantation gradually produces a culture that is in the end hemolytic to the individual blood.

A so-called cryplogenic pneumococcus blood stream infection might be described as follows. A progressive, intensifying, cultural, virulency from primary and multiple secondary thrombosis; every shower a chill, every chill a new thrombus; a condition which, barring the accident of embolism, will gradually bring about hemolysis and death, thus cutting the process of dissolution short of its inevitable terminal tissue pathology.

There is some interesting work being done looking to a specific for the pneumococcus. It was started in Germany by Morganroth, and continued in this country by Moore and Chesney. It was interrupted by the war and has only recently been resumed. The substance is ethylcuprein, sold in Germany under the trade name of opticin. According to Moore, it is bactericidal to all groups of the pneumococcus, but possesses no such action for the streptococcus. He has shown also that normal serum subjected to the action of opticin becomes bactericidal to all types of the pneumococcus. Strangely its maximum efficiency is by the hypodermic route and inversely by the venous. Loeschke, reviewing the results in Germany, shows a mortality in three hundred and twenty-three cases of lobar pneumonia of one and one-tenth per cent. The original dosage was about twenty-five mg. per kilo body weight.

The modern American idea is the use of a numoquin base which eliminates the danger of the toxic accidents of the drug,—temporary blindness and impairment of hearing,—by regulating the conversion of the base into the salt with a diatetic control.

The cardinal symptoms of blood stream infection, and especially of the pneumococcus infection, are:

- (1) Persistent high fever with malaise;
- (2) Sharp chills or chilly sensations irregular and repeated;
- (3) Headache severe in character without apparent cause;
- (4) Apathy alternating with a mild wandering delirium;
- (5) A persistent pulse of 120 and over not otherwise accounted for is almost pathognomonic;
- (6) The urine is scanty, high in color, containing albumin, casts, with a constantly threatening uremia and suppression;
- (7) The skin at some time during the disease will show either an intense scarlet rash,

petechial spots, or ecchymotic areas:

(8) The central nervous system exhibits almost constant symptoms; mild delirium, fine tremors, picking at the nose, or other manifestations;

(9) The leucocyte count is widely variable;

(10) The erythrocytes do not show the same loss in hemoglobin, or the same color index, or the same degenerative changes, in the degree that we see them in septicemia from streptococcus or staphylococcus infection.

My idea at the present time of treating a pneumococcus blood stream infection is, either to let blood therapy alone and treat the case expectantly as one would a typhoid (for, after all, typhoid fever gives us the purest example of bacteremia), leaving out of consideration mercurochrome, gentian violet, antigens, vaccines, suspensions, and transfusions; or, I would immunize a suitably matched donor with the hemoquin base and transfuse with the whole blood.

DISCUSSIONS

E. S. Allen: I do not know when I have listened to a paper of greater interest or prepared with greater care than the one just read by Dr. Koontz. He has covered the subject so thoroughly that there is little left to be said.

In the case reported the primary focus may have been the finger even though there were no marked secondary manifestations. We know that for the most part blood stream infection is secondary to a primary focus located elsewhere in the body. Nature is presumed to protest the blood stream from primary infection, and when the blood stream becomes infected secondarily the primary focus is prone to show little or no further manifestations. For example, in gonorrheal urethritis, when severe epididymitis develops the urethral discharge subsides. When blood stream infection supervenes, the primary focus may no longer show a great amount of disturbance. The protective forces of the body are ordinarily sufficient to prevent infection of the blood stream unless the resistance of the individual is markedly impaired.

As to cultures from the blood stream: It is not unusual to find bacteria of various kinds in the blood stream, and yet no harm is thereby produced upon the host. The most important factor that we have to consider in blood stream infections is the amount of blood the individual has at the time. If anemia is present, or if there has been any considerable hemorrhage, as in labor, miscarriage, etc., then the lowered resistance of the patient may be responsible for the bacteria gaining a foothold. In the case reported the lowered resistance of the patient might have been an important factor.

As to the treatment of blood stream infection by means of mercurochrome, gentian violet, etc.: I rather agree with what the essayist has said,

that the result depends largely upon the natural resistance of the patient. We are all doubtless familiar with cases where the patient recovered because of the treatment administered, and in others where recovery ensued in spite of the treatment. Although the plan might appear feasible based upon present understanding, yet I doubt very much whether typhoid fever could be shortened in its course by the intravenous injection of even large doses of mercurochrome, gentian violet, or any other drug of that class. These chemicals may have a decided deleterious effect upon the kidney, a fact which must not be overlooked. I have administered gentian violet in virulent streptococcic infection without any appreciable beneficial effect.

Pneumococcic blood stream infection is rare and few cases have been observed. During 1911- or 1912 while I was engaged in laboratory work I made a blood culture on a patient of Dr. L. S. McMurtry's and found blood stream infection from the pneumococcus. This was confirmed in the laboratory of the University of Louisville. Routine blood cultures would probably show a greater number of pneumococcic blood stream infections than we have hitherto believed to exist. There seems to be a tendency in certain cases for the pneumococci to become localized and abscess formation—these cases generally recover. If the patient is seen after the infection has become localized there will always be noted a marked rise in the opsonic index. In the case Dr. Koontz reported the temperature changes may not have been due so much to the pneumococcic antigen administered as to shock produced by the serum. It has been demonstrated by experience that shock frequently follows large doses of serum with a decided lowering of the temperature for a few hours, but later the temperature again rises perhaps to a higher mark than before.

I recently had under observation a child of four years who had streptococcic osteomyelitis. The bone was opened and drained, but the child later developed streptococcic infection of the blood stream. Purulent pericarditis developed and under local anesthesia the pericardium was opened and drained. Mercurochrome one percent solution was used for irrigating the pericardium, but there was no appreciable change in the quantity of pus—nor was the discharge ever streptococci free.

As yet we have no chemical with sufficient bactericidal properties to sterilize the blood stream without doing permanent tissue damage.

Edward R. Palmer: I was particularly interested in the essayist's summary in regard to the therapeutic action of the various dyes in common use. I was gratified to hear the report from the Indiana University as regards these dyes, as it confirms the position which I have

taken in regard to the action of germicides for a great many years.

You will probably recall that I presented a paper before this society six years ago in which I "took up the cudgel" against Professor Ehrlich's salvarsan. This you will remember was developed from Ehrlich's side-chain hypothesis and the recent theory of chemotherapy, the idea being to produce a chemical agent which would have a lethal effect upon micro-organisms in the circulation and yet be harmless to the body tissues. I stated then that I did not believe there was ever a micro-organism killed in the tissues of the body by the direct chemical action of a drug no matter how administered without the tissues of the host being injured or destroyed. The position taken at that time I believe I have successfully defended until the present, and it is gratifying to see that now the correctness of my position is being generally recognized. Yet it is a curious thing that every now and then the theory is advanced even by men of prominence and experience that such drugs, for instance, as mercurochrome, gentian violet, etc. introduced into the body through the blood stream or otherwise will kill bacteria and not destroy the tissues in which they exist. In my opinion there is now and never will be such a drug or chemical agent. There is but one thing that cures disease, and that is the protective mechanism of the body itself. Chemical agents act in two ways: (a) they as catalyzers assist the formation of antibodies, or (b) they act as bacteriostatics. Bactericidal agents cannot be introduced into the body in sufficient concentration to attack the bacteria in the tissues and destroy them. This applies to mercurochrome and every other chemical known. The catalytic action of certain drugs is better when administered hypodermically than intravenously. Catalytic action is one which hastens the velocity of a reaction that is normally taking place in the body without entering into the reaction.

I am glad to see that the modern trend of thought will eventually sustain the position I took when I claimed that Ehrlich's *therapie sterilizans magna* was a dream!

Fred L. Koontz (in closing): Referring to the point made by Dr. Palmer: It has been demonstrated and is recognized that both gentian violet and mercurochrome possess a certain degree of toxicity and are capable of producing injury to the body tissues. I wish to make it clear, however, that mercurochrome and gentian violet are two entirely different propositions. Mercurochrome is a toxic mercurial, but gentian violet may also be toxic in greater concentration than one to two hundred.

SYMPOSIUM ON GOITER

CARCINOMA OF THE THYROID.*

By J. P. KEITH AND D. Y. KEITH, Louisville.

This case is presented for your consideration on account of the infrequency of malignancy of the thyroid. In a digest of the literature at our command, it is quite evident that only a very few cases of malignancy are correctly diagnosed, clinically.

Crile, (1), reported in 1924 the occurrence of carcinoma 107 times in 7617 thyroid operations. In a review of the same material, Graham 2, gives ten to fifteen percent of the total as being of the scirrhous or papilliferous type. These two types being the only ones in which an invasion of the blood vessels is not constant. Blood vessel invasion is as consistently absent in these two groups as it is constantly present in the remaining groups. These two types are primarily lymphatic invaders, particularly is this true of the papilliferous type.

In the case presented, the diagnosis was made clinically, on the macroscopical invasion of surrounding structures and confirmed at a later date, by its ability to metastasize in the regional lymphatics.

When first seen, local invasion had occurred, with firm fixation of the tumor to the skin and surrounding structures, with very definite evidence of beginning skin destruction.

Graham (2), states that ninety percent or more of the malignancies occur in the cell-nests of fetal adenoma. If this be true, the prevention of carcinoma of the thyroid is to feed the mother iodine during pregnancy as a positive preventive measure.

Case Report: Mrs. H., aged, (?) was first seen with Dr. H. H. Hagan on November 3, 1922, who supplemented the following history: One and a half years ago, patient was treated for a cystic mastitis of the left breast, that had ruptured before he was consulted. Later the right breast suffered the same condition. The patient's cardio-renal system prevented any surgical procedure. At present the breasts are giving no trouble.

Present history: Two weeks ago the patient presented herself for treatment of a nodular tumor of the thyroid, that has changed very little in size since first seen. On examination we found a large, well developed, moderately nourished patient, presenting evidence of a mild anemia. There was a stony hard tumor of the thyroid, slightly larger than a lemon extending to the right of the median line. Over the apex of the tumor, the skin was quite red, evidence of be-

ginning destruction. Evidently the malignancy had originated in the anterior portion of the thyroid, involving the skin quite early.

Treatment began on November 3, 1922, and between this date and November 8, 1922, she received deep x-ray therapy, using the following factors: Voltage 200, equivalent to a spark gap of 16 inches; M. A. 4; anode skin distance 50 cm.; filtration 1mm copper, 1mm aluminum and sole leather; time three hours and forty-five minutes.

A mild second-degree radio-dermatitis was experienced with desquamation. Seven weeks after treatment a small necrotic area appeared requiring incision that did not heal completely for sixty days. Very little reduction in the size of the tumor was noted until the third month after treatment, after which time the reduction was rapid until it completely disappeared about the end of the fourth month.

There is no induration or skin fixation at the site of the necrosis and only a faintly visible scar. The patient rapidly improved in general health with a gain in weight, experiencing a complete relief from what she thought was a cervical neuritis, which was accompanied with a great deal of pain.

No local symptoms were experienced for nine months (August 1, 1923) when a tumor appeared in the left sub-maxillary area, that had gradually increased in size until at this time (August 15, 1923) it is the size of a pigeon egg, apparently fixed to the deeper fascia, with slight redness of the skin over the tumor suggesting a low grade infection.

Treatment was instituted, using the same factors as previously, giving three hours and fifteen minutes time. Six weeks later a prophylactic dose of two hours was given.

Three weeks after the first application of x-ray, a small necrotic area appeared, the skin breaking with discharge of a small amount of secretion for a few days, accompanied with rapid tumor reduction and rapid healing.

Ten weeks after beginning treatment, this nodule had entirely disappeared with complete healing of the skin. There has been no further evidence of recurrence or metastasis. She has been seen at frequent intervals for evidence of recurrence or other metastasis, but to date (February 1, 1926) none have appeared. There is no noticeable scar at the site of either tumor.

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ETIOLOGY OF EXOPHTHALMIC
GOITER.*

By W. E. GARDNER, M. D., Louisville.

Exophthalmic goitre, also known as Graves' disease, Basedow's disease, cardiothyroid exophthalmos, and struma exophthalmica, is characterized by the three so-called cardinal symptoms of rapid heart, enlarged thyroid gland, and undue prominence of the eyeballs. In addition to the above cardinal symptoms, we just as frequently see a fine tremor, mental irritability, and muscular weakness, which latter symptoms are due essentially to an excessive or perverted action of the thyroid gland, and may be manifest in the general syndrome of hyperthyroidism, even in the absence of a typical exophthalmic goitre.

This disease was first described by Flajani of Italy in 1802, and by Parry of England in 1825. Graves taught it as a disease entity in 1835, and published it as such in 1843; while in the meantime Basedow of Germany had independently described the condition in 1840. Hence, the various names that have been applied to the disease in different countries.

Exophthalmic goiter belongs essentially to the reproductive period of life, being rare before puberty, and seldom seen to develop after the menopause. When the disease does occur in children, it is more acute and rapid in its course and development than in adults. It affects females five or six times as frequently as males.

A neuropathic hereditary tendency has been noted in many cases, and it is the opinion of most authorities that the disease is most likely to develop in individuals with such an hereditary background, no matter what other underlying factor may be present as a predisposing or exciting cause. Pubescence in girls, menstrual difficulties, chlorosis, and all debilitating conditions act as predisposing causes.

Emotional and mental shocks, especially profound and protracted anxiety and grief may act as exciting causes. In fact, some authorities have contended that fear is one of the most important exciting causes, and have cited the fact that so many goiters developed in young soldiers during the late war as evidence of this; but after all, it is our opinion that back of this factor there were probably definite and fundamental defects in the endocrine balance of such individuals, and that the mental strain only served to precipitate the more prominent symptoms.

Pregnancy may seem to excite the disease,

and yet when appearing in the course of the disease, may either modify the symptoms for the better, or in some instances actually aggravate those already present. After delivery, however, there is usually distinct improvement.

Exophthalmic goiter is often associated with other neuroses, such as chorea, hysteria and epilepsy; has been noted coincidentally with syphilis of the nervous system, and the mental disturbance produced by the disease itself sometimes amounts to that of an actual psychosis or insanity. In rare instances the disease has been associated with tetany, scleroderma, myxedema and acromegaly, all of which are closely allied, either through relation to the thyroid body or to other glands of internal secretion.

Infections and toxemic states may frequently act as exciting agents, if not actually causing the disease.

The apparent increase prevalence of goiter in certain countries or in particular localities of a country, has been held by some authorities to prove the theory that there is a deficiency of iodine in the food or water of such a territory. It is my opinion, however, that statistics here, as in many other instances may be misleading, for it is a well known fact that for many years some members of the medical profession have been more interested in goiter in one locality than in another, and in those sections where the profession has been most interested we are likely to have had the largest number of cases reported; especially, if there has been a considerable number of surgical cases. While we admit the theory of an iodine deficiency as being a plausible one in most cases of so-called simple goiter, yet we doubt if this alone will explain many cases of exophthalmic goiter.

As strange as it may seem, the blood changes in exophthalmic goiter and in myxedema are similar. There is in both a relative lymphocytosis, with an increased number of eosinophiles, and a diminution of the neutrophile leukocytes. In exophthalmic goiter the coagulation time is increased; in myxedema it is diminished.

The basal metabolic rate is definitely increased in over ninety per cent of cases of exophthalmic goiter; in adenoma with hyperthyroidism it is definitely increased in over sixty per cent of cases; in adenoma without hyperthyroidism the basal rate is within normal limits in one hundred per cent of cases.

General considerations relative to the hyperfunctioning, hypofunctioning, and disturbed action of the thyroid gland, as seen in the clinical pictures have led some observers to the conclusion, recently, that the vegetative nervous system plays an important role

*Read in Symposium on Goiter before the Jefferson County Medical Society.

in accounting for many of the symptoms presented, and that this may manifest itself through either one or both of its subdivisions, viz: the sympathetic proper, or the parasympathetic or autonomic nervous system. In other words, that in many cases of hyperthyreosis, hypothyreosis or dysthyreosis, there may be a condition sometimes referred to as autonomic imbalance.

For some time, it has been pretty well understood that the function of the sympathetic proper is to stimulate the action of involuntary muscular fibre and glandular secretion; while that of the parasympathetic, which is more closely related to the cerebrospinal system through its special centers in the brain and cord, has, in a general sort of way, an inhibitory action.

In exophthalmic goiter the sympathetic irritation could account for the exophthalmos, tachycardia, loss of weight and alimentary glycosuria. Autonomic weakness might explain the von Graefe sign, the lymphocytosis, and diarrhea. The influence of the thyroid on the carbohydrate metabolism, as seen in the rapid emaciation and alimentary glycosuria, may act through a retardation of the pancreatic function, or be due to an overactivity of the adrenals. It is furthermore claimed that the thymus gland is involved in the changed blood picture that we see in these cases.

Of the great number of patients with autonomic imbalance, only a small percentage develop exophthalmic goiter. Practically all patients with exophthalmic goiter, however, give a history of a diathesis toward autonomic imbalance, and the transition from the so-called simple autonomic imbalance to exophthalmic goiter is characterized by the appearance of a metabolic change measured by an elevation of the basal metabolic rate. With the elevation of the metabolic rate, we have the characteristic symptoms which are due to an increased catabolism, viz: loss of weight, tachycardia, asthenia, etc.

It has been held by Hyman and Kessel of New York, in a recent article published in the *Journal of the A. M. A.*, that such an increase in the energy metabolism may be produced by so-called sympathomimetic influences, such as emotional shock, or the amines of the epinephrin group, or cocaine, but that these influences, alone, do not help account for the uncomplicated period of autonomic imbalance, and that an additional etiological factor may be involved in the transition to exophthalmic goiter.

These authors make the observation that the deficiency theories regarding the role of the parathyroids and suprarenal cortex have not been sufficiently proven, but that the fre-

quent hyperplasia of the thyroid gland, itself, has for many years directed attention to a possible thyrogenic origin of the disease. They claim, however, that there is no direct proof that the thyroid secretion is actually involved, for it is neither sympathomimetic nor capable of sensitizing the involuntary nervous system, but that it has a definite calorigenic capacity, and accordingly may be responsible for the transition from autonomic imbalance to exophthalmic goiter.

While feeding enormous quantities of thyroid extract may, occasionally, produce an incomplete picture of exophthalmic goiter; and the fact that myxedema, which is admittedly due to a hyposecretion of the thyroid, has been considered the antithesis of exophthalmic goiter, yet the most potent and important clinical indication in favor of the participation of the thyroid in the development of exophthalmic goiter is the relief of symptoms of exophthalmic goiter following the vast majority of the cases of subtotal thyroidectomy.

The above considerations lead one to the conclusion that there must be a combined neurochemical action, in that exophthalmic goitre is dependent upon hyperactivity of the thyroid secretions, which increased secretions act through the visceral or vegetative nervous system, and that both sympathetic and automatic systems are in a state of hyperexcitability.

The detoxication hypothesis in which a dysthyreosis is assumed with a type of iodine poisoning from insufficient detoxication has attracted some attention, but has not yet been sufficiently proven to find a substantial footing in the standard textbooks upon this subject.

Therefore, we may say in conclusion, that the full etiology of exophthalmic goiter is still in the dark, and just why one apparently healthy individual may develop this condition after a shock or some undue stress or strain, and another may manifest only symptoms of a definite hyperthyroidism, without goiter or exophthalmos, under the same conditions; or both have their symptoms come on without any definite exciting cause, it is difficult to say, unless we assume some inherent instability of the vegetative nervous system, or what may, or may not, be the same thing, an imbalance in the function of the glands of internal secretion.

PATHOLOGY OF THYROID GLAND.*

By FRANK P. STRICKLER, M. D. Louisville.

In order that we may understand the morbid anatomy of the thyroid, let us first consider briefly the embryology, normal anatomy, and histology, and I might add, chemistry.

The thyroid arises after the manner of ordinary glands as an evagination from the epithelium of the pharynx by three separate rudiments, a median and two lateral, at a point in front of the second visceral arch and appears in embryos of 3 to 5 months as a ventral outgrowth of epithelium in the floor of the pharynx at the point where the tuberculum impar and two paired anlagen of the tongue join. The evagination grows into the mesodermal tissue in the ventral walls of the neck forming a transverse mass of epithelium. This mass of epithelium breaks up into irregular cords of cells which by a further process of budding grow caudally along the ventral surface of the larynx. The cord cells are surrounded by connective tissue and later become surrounded by a network of capillaries. These cells ultimately break up into smaller masses which become hollow and form alveoli. Colloid secretion begins toward the end of fetal life or soon after birth.

As the gland grows toward its final position it becomes enlarged laterally into lateral lobes connected by the isthmus.

The parathyroid also come in close relation with the thyroid arising as paired evaginations from the cephalic sides of the third and fourth branchial grooves. As the thyroid grows these bodies come to lie close to, or imbedded in, the thyroid.

The pyramidal or middle lobe, when present, represents either a secondary outgrowth from the isthmus or a remnant of the original connection with the tongue, the thyroglossal duct.

The thyroid gland in adult life is a highly vascular gland grasping the upper part of the trachea and extending upward on each side of the larynx. Its size varies in different individuals, and in the child and female it is always relatively larger than in the adult male. As mentioned above, it is composed of two lateral lobes and an isthmus. The lateral lobes are conical in shape and extend downward on the trachea to the 5th or 6th tracheal ring, the apex of the lobe rests upon the ala of the thyroid cartilage. Accessory glands may be found along course of thyroglossal duct, in the trachea, and occasionally lobes are found behind the stren-

um and in the chest, and occasionally a lateral lobe may be missing.

The gland receives its blood supply from two superior thyroid arteries. Two inferior thyroid arteries also the thyroidea ima. The greater portion of the blood supply is from the superior thyroid arteries. The veins of the thyroid are the superior middle and inferior veins; all of these vessels anastomose freely in the gland.

The nerve supply accompanies the blood vessels and is derived from the middle and inferior cervical ganglion.

The lymphatic circulation of the thyroid has not been very well worked out. It is suggested, however, that the acini are surrounded by a network of capillaries filling the interspaces between the acini, that these capillaries collect into larger trunks which empty into the lower cervical lymph glands.

From a standpoint of histology the thyroid is a compound alveolar gland, composed of two lateral lobes and an isthmus inclosed in a white connective tissue capsule. From the capsule sustentacula extend into the interior of the gland dividing the gland into distinct lobulations, from these heavier septa fiber bundles extend to form the walls of the acini. These terminal filaments are very fine and form a plane of tissue upon which the cells rest. The acini are variously shaped spherical or polyhedral, and the cells lining the acini are of two types, the colloid cell, and the resting colloid cell, they are as a rule cuboidal in type. The interacinal cells are morphologically the same as the acinal cells. The colloid contained in the acini is attached to the cells by fine processes which are apparent when the colloid shrinks.

The blood vessels follow the septa of the gland, as do the nerves. The lymphatic system, as previously mentioned, has not been perfectly worked out.

We will touch only in a superficial way on physiology of the thyroid. The mode of action of the thyroid is very complicated, and Blum maintains that the action takes place within the thyroid by contact of the blood with glandular tissue, but the view of most authorities is that the action of the thyroid is carried out by the products of cellular secretion being poured into blood vessels and lymphatics. The average amount of iodine contained in a normal thyroid is 5 to 6 mg. From a standpoint of chemistry the following substances are the principal chemicals found:

(A) Albuminoid substances:

Iodothyrene of Baumann.

Iodothyreoglobuline of Oswald (containing 0.15 iodine).

Nucleoprotein of Oswald, (containing no iodine).

*Read in Symposium on Goiter before the Jefferson County Medical Society.

(B) Non-albuminoid substances:

Thyreoglandular of Hoffmann and Laroche.

Thyroxine of Kendall, containing 65% iodine.

No attempt will be made to discuss the inter-relationship between the thyroid and other endocrine glands.

The usual functions attributed to the thyroid are control and stimulation of tissue growth in general. Control and stimulation of the functional processes of tissue. Neutralization of toxic substance produced in the normal metabolism of tissue and assistance in the defensive action of the organism against bacterial toxins.

Any pathological processes of thyroid which interferes with its physiological function strikes at the foundation of the organism.

Any kind of inflammatory process may occur in the thyroid, particularly abscesses produced by the pyogenic bacteria. Diffuse acute inflammatory reactions usually occur in adenomata especially when they are undergoing cystic or hemorrhagic degeneration.

Tuberculosis of the thyroid usually occurs in the miliary form, although caseous areas are sometimes seen.

Following inflammatory processes, the thyroid may undergo fibrous degeneration. In this condition there is a diminution of epithelial tissue and a preponderance of connective tissue. The epithelium may entirely disappear or become degenerated and exfoliated into the colloid of the acini. The epithelial cells may also be pressed together and with the disappearance of the colloid form cells nests surrounded by connective tissue. Such areas are sometimes regarded as malignant by credulous pathologists. When this type of degeneration involves a large portion of the thyroid hypofunction develops.

Cystic changes: By the coalescence of a number of large acini a colloid cyst may be formed, or this change may also occur in the center of a nodule. This type of cyst usually involves the interstitial connective tissue and follicular epithelium. Hemorrhage may occur into these cysts, due to changes in the blood vessels. At this point, I might mention that C. Hesselberg observed atheromatous plaques in the thyroid arteries of a new-born child. This atheromatous change in the arteries should be borne in mind when doing ligations.

The contents of the above mentioned cysts

are usually a blood tinged gummous material. The practical interest in cystic changes in the thyroid is that occasionally an extensive hemorrhage into a cyst will increase the size of the gland to such an extent that the trachea is compressed and the patient is asphyxiated. Occasionally large solitary cysts are found in the lower poles or isthmus when the gland shows no other changes. These are very likely congenital and hemorrhages rarely occur in them.

Amyloid degeneration occurs as part of a general amyloid disease. Gelatinoid, hyaline or mucoid changes start in the center of nodules which at first is mucoid in character and later becomes uniformly hyaline.

Calcareous degeneration occurs in long standing goiters degenerated centers or areas of the gland impregnated with phosphates or carbonates of lime. These calcareous plaques not infrequently become attached to the trachea making separation difficult at operation, also producing in some cases extensive erosions of the tracheal rings. When calcareous deposits occur near the upper poles ligation of the superior thyroid becomes very difficult.

Bone formation has been reported in the thyroid gland, but this is a very rare condition and seldom seen.

Malignancy: Fully 95% of malignant growths in the thyroid gland are carcinomatous. Practically all carcinoma depend on the fetal adenoma for their origin. However, the papillary carcinoma is an exception, and with it there are included a few carcinomata whose exact origin and nature remain in doubt.

Sarcomata represents about 5% of malignant tumors of the thyroid. These sarcomata do not differ from sarcomata in other parts of the body. They are mostly round and spindle cell, but occasionally a combination of round, spindle and giant cell tumors are seen. Lympho-sarcoma is also found. Its origin is the lymphoid tissue commonly present in thyroids.

Fetal adenoma has its origin in the so-called Wolfers rests, embryonal remnants left over from the developmental period of the thyroid gland. The usual site of these adenomas is in the lower pole of the right lobe, occasionally found in the isthmus, but may occur in any part of the gland. The fetal adenoma is usually encapsulated, and as the name implies, the structure of the tissue is similar to the fetal gland. The structure is composed of closely packed cells, the acini are small, and contain little if any colloid material. Colloid material becomes more in evidence if toxic symptoms develop. As mentioned previously, fetal adenoma are responsi-

ble for a very large per cent of malignant conditions of the thyroid.

In developing goiters, simple or exophthalmic, the thyroid enlarges, the vascularity increases, the gland becomes softer. Iodine and colloid content diminishes, acini become larger and more variable in size, epithelial cells become larger. This is the picture of simple hypertrophy. If the exciting cause continues to operate the changes mentioned above increase. There may also be proliferation of epithelium in the acini, formation of new acini, enfolding and papillary projections of the wall into the acini—these changes constitute hyperplasia.

Should the exciting cause cease to operate after the gland has undergone hypertrophy and hyperplasia the gland may involute to recovery. When recovery or involution is incomplete the gland becomes a colloid goiter. As far as is known a colloid goiter has the same physiological and biological capabilities as the normal gland and reacts to a sufficiency or insufficiency of iodine the same as the normal gland. The colloid goiter is usually large in size, the acini show greater variability in shape and size. The cells lining the acini are flattened, and the acini contain an increased amount of colloid. The stroma of the gland is also increased. The colloid goiter of long standing is the type which undergoes secondary toxic changes, either of the degenerative toxic goiter or the secondary adenomatous goiter types. In the degenerative type the changes are a degeneration of the colloid, while in the adenomatous goiter there is a rejuvenescence of cells. The acinal cells are increased and sometimes there is an increase of gland formation. When exophthalmos is present papillary formation will be found and often associated with it is a round cell infiltration. The colloid in this type also undergoes degeneration and contains much debris of epithelial cells.

Diffuse adenomatous goiters are of two types, glandular and papillary, both are toxic and there is no macroscopic difference between these types. They vary greatly in size. When small may be firm and elastic, when large, soft and pulsating, on section they vary from red to greyish-red in color.

In the glandular type the chief change is in the acinal cells. They are higher and take a deeper stain. There is also marked proliferation of acinal cells within the interstitial tissue from which are formed secondary acini. These new acini may contain little or no colloid. There is a marked infiltration of the interstitial tissue by round cells and these may become so numerous that they simulate lymphoid tissue.

In the papillary type there is a prolifera-

tion of the cells of the pre-existing acini producing projections of papillary formation into the lumen of the acini. This picture is absolutely characteristic of exophthalmic goiter and it is very rare to find eye symptoms without papillary formation, although papillary formation may be found without eye symptoms. The acinal cells are tall columnar cells and stain deeply. Colloid, if present, is granular and degenerated and in extremely toxic cases cells are exfoliated into the acini.

It must be kept in mind that the above mentioned microscopical changes do not occur uniformly throughout the gland and it is necessary to study the entire gland to decide the dominant lesion. Several types of disease may occur in one gland.

Interstitial proliferative goiter, as the name implies, is an extensive proliferation of the interstitial cells. The acini and colloid show practically no changes. The interstitial cells are of the same general morphology as the cells of the acini. The source and significance of these cells is unknown, and remains to be explained.

Adolescent goiter is a type which appears at a developmental period of life and disappears again. However, it sometimes continues to develop and assumes a definite place, and from a pathological standpoint may be considered a simple colloid goiter.

No mention of the pathology of hypothyroidism will be made, as it is beyond the scope of this paper.

It must be borne in mind that the definite pathology and its significance in the thyroid gland is far from being positively settled. Various authorities and investigators differ somewhat in their classification of pathological conditions of the thyroid, although they more or less conform.

Wonderful progress has been made in the study of the thyroid gland, and it is to be hoped that the near future will materially advance our knowledge of this most interesting subject.

The subject matter of the above paper was taken from the works of Crile, Mayo Clinic, Crottie, Hertzler, and De Quervian. (F. P. S.)

Sublingual Exostoses.—Forty-two cases are reviewed by Kurtz. There were three times as many females as males. Antecedent trauma was given as a cause in twenty-eight cases. In twelve cases, a history of long continued suppuration from ingrown nail was given. In two cases, both factors were present. The diagnosis is said to be easily made. The treatment is operative.

HYPOTHYROID STATES.*

By CURRAN POPE, M. D., Louisville.

It is indeed a pleasure to have been selected on this auspicious occasion to speak to such a learned gathering upon the subject of Hypothyroid States. These are so frequently overlooked and in their minor manifestations are so little understood by the practitioner who is not alert to these conditions that one hopes that by calling attention to some of the more interesting phases of this state that much good may be done and the man in general practice brought more closely and actively in touch with its manifestations. Sometimes such a diagnosis is determined by apparently inconsequential symptoms which call to mind the remarks of Thomas H. Huxley, "That the smallest fact is a window through which the infinite may be seen." The thyroid is the "Activator" secretion of the human body maintaining the balance between the input and output and regulating other endocrines, the sexual and nervous systems in many ways. Its function is largely that of a catalyzer. Partial or complete failure of the thyroid is far more common than is generally supposed. This may occur in young or old but it most frequent in those years past middle life. It is likely to be more frequent in the future because of the large number of goiter operations that have been done. Without doubt the thyroid gland exerts a most remarkable control, not merely through metabolism, but through its action upon the sympathetic nervous system and the circulatory mechanism upon nutrition. By virtue of its secretion it causes amino acids to be further decomposed into carbon dioxide, water and ammonium carbonate, preparing these partially split up proteins for release from the body in the form of the chemicals above mentioned. When this does not take place oxidation becomes lower, the entire body economy slows down with a lower cerebral activity and a clogging of the individual cells.

HISTORICAL

Thyroid disfunctions have been known for many decades. Sir William Gull first fully described myxedema in 1873 and later wrote extensively on this subject in the year 1884. It was Ord who first called it myxedema. In 1883 Kocher of Berne first described operative myxedema. In spite of all this study and investigated no method of treatment had been devised until 1891. Up to this time patients lived in hopeless imbecility or suffered from its various manifestations until the

eventful chapter was closed by death. It was in 1891 that Murray, an Englishman, described his experiments especially treating of the condition of cachexia strumipriva caused in dogs by the removal of the thyroid gland. It was in this same year that George Murray published his experiments and results brought about by the injection of a glycerine extract of thyroid gland.

It however remained for Hector McKenzie (London, Englishman) E. L. Fox (Plymouth, Englishman) and Howitz (Copenhagen, Dane) each working independently of the other to show the equally potent effect of the oral administration of thyroid glands, both raw, cooked and as a powder.

TYPES

The types or groups of symptoms may be roughly arranged according to the age of the individual affected. In early or infantile life we have a number of minor states ranging from a well defined and marked cretinism. In the child the minor state is often exhibited by late walking, slow development of talking, difficulty in standing and some uncertainties in motor activity. Underdevelopment of all bones and late teeth eruption are among the commoner manifestations at this age. Especially to be noted at this time is a retarding of the mental development of the child. I have seen a number of children that have been sent to clinics and subjected to the Binet-Simon Test and pronounced mentally deficient when in reality they were suffering from well defined hypothyroid states. When the status of the child is such that it is at a glance a cretin with its thick tongue, pouting lips, spinal lordosis, its pot belly with thick dry skin and in the female early onset of menstruation, we have a picture of such easy legibility that "He that runs may read" and when this diagnosis is confirmed by a marked decreased basal metabolism the picture is complete.

In older children, in young adults, we oftentimes find unmistakable signs of myxedema. When a young, active, individual shows failing memory and loss of special sense acuity with marked diminution of physical strength and mental vigor and who shows a constant diurnal tendency toward somnolence, we should be on the lookout for a diminished thyroid secretion. Add to this an increased weight, a dry skin with decreased sweating, ample fat but the subjective sense of cold and chilliness with actual cold extremities and the susceptibility to foreign protein intoxication as evidenced by hives, urticarias, etc., we have a group of strongly indicative subjective signs. Among the ob-

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jective signs is to be noted the lardaceous hue of the skin (pasty yellow) and the well marked supraclavicular and posterior cervical fat padding with chubby or padded hands and feet together with more or less generalized subdermal infiltration. Usually we find the skin dry and harsh, the hair fine, poorly nourished and thin. The narrowed palpebral fissures and characteristic infiltration of the lids with puffing of the face gives to the individual a facies that might be said to be characteristic. To the watchful clinician these objective signs in minor degree will be observed and confirmatory tests supply the needed link in the diagnosis. These special signs consist of decreased basal metabolism, increased sugar tolerance and blood pressure changes due to vascular infiltration.

ATYPICAL TYPES.

These are the types that test our diagnostic acumen. They are the 'formes frustes'; the "laval myxedema" the "hyothyroide benigne" of Hertoghe or as I am pleased to term them the "Borderliners." This condition is frequently unrecognized. Sometimes the intuition that comes of long experience will sense the condition and put the clinician on his guard. These cases are still more frequently associated with the insufficiency of the other glands of internal secretion presenting thus a mixed type. They will usually complain of a number of subjective symptoms such as sensitiveness to cold, cold extremities, lack of "pep", general loss of mental and physical tone. We usually find a decreased metabolism.

I consider that another type should be recognized and that is what I call the "senescent" type. These patients present the normal appearance of age. They may or may not have lost their previous excess of fat. Their skin is dry and wrinkled, the hair is brittle, and falls out, they lack physical energy and suffer from mental inertia together with low sexual capacity. This state may occur even in moderately young people. Sometimes we will find a single or several of the typical signs of hypothyroidism. It may present itself in a typical pathological state with a marked premature appearance of senility, but with milder signs than severe hypothyroidism.

NEUROLOGICAL SIGNS.

These cases nearly always present quite a number of neurological signs. They nearly all require sleep, rarely if ever suffer from insomnia and usually sleep soundly. They suffer from headache, of a dull, heavy tired type, usually frontal or occipital and generally worse in the morning. These cases while not neurasthenic present neurasthenoid symptoms, a term I employ to distinguish this

condition from *neurasthenia vera*. Nearly all of these cases suffer from the matutinal fatigue so characteristic of the nervously exhausted individual and this becomes especially accentuated if work is attempted in the morning. These patients often complain of generalized dull aching on slight effort. They complain that the pains are vague, usually in the muscles, bones or joints and are sometimes described as being like growing pains. They are usually slow in their mental activity.

SKELETAL.

The type of these cases in youth is that of small stature and defective development. Where growth takes place they are usually of a broad, thickly built physique with clumsy hands, short fingers usually broad or "spatulate" at their ends. There is a tendency to retardation in length of the bony growth as a result of which the bones are short, thick and deformed. The skull contour is apt to be round. They are usually "loose jointed," that is to say suffering from relaxation of the ligamentous structures. As a consequence of this they have little or no difficulty in cracking or snapping of the small joints. Slowness and clumsiness of muscular action is not unusual. In the evening shoes are temporarily found too tight for the swollen feet and rings may be difficult to remove from the fingers.

SKIN.

The characteristic skin ranges from well marked dryness with tendency to scale easily to a dry skin, thick, wrinkled and non-transparent. Small warty growths in large numbers occur with a fair degree of frequency. The skin color is sallow, yellowish or earthy and is subject to frequent eruptions among which may be mentioned erythema, urticaria, chronic eczema, etc. They perspire with difficulty yet suffer from acrocyanosis, that is to say, with cold, bluish, sometimes moist hands, feet, fingers and toes. There is a tendency to chilblains (Pernio) with difficulty for slowness in the healing of wounds, in callus formation and in the regeneration of nerves.

HAIR.

Usually the hair is coarse, dry, tending to fall out. It lacks brilliance, looks dusty and is associated with dandruff or scaliness, sometimes in such quantities as to cause the patient to seek medical relief for this symptom alone. The hair may be scanty, thin, brittle and possess defective pigmentation. Partial alopecia, premature baldness and premature grayness are not infrequent. The eyebrows tend to fall and rarefaction or disappearance of the outer third is not uncommon.

NAILS.

The nails are usually hard, brittle, fragile, showing ridges and thickening. The normal arching may be absent and the size may be increased. In some cases they become unduly thin, and may show defective lunulae (crescents) and white spots.

EYE—EAR.

These cases tend to have a smaller eye than normal. The cornea is dull which with the deep set eyeball gives them a tired listless look. If the condition is sufficient to cause the eye lids to swell the palpebral slit becomes narrower than in health and causes the eye to assume a somewhat Celestial look. The iris is usually hazel or gray green; rarely of a clear color, brown or blue. When the whole condition of the eye is observed the general appearance of sleepiness is well marked. In the ear scales usually form in the external auditory meatus.

NOSE, MOUTH, THROAT.

There is a tendency toward rhinitis and crust formation. The nose is usually smaller than normal and adenoids and its consequent mouth breathing are very common. The lips tend to dryness and cracking. The tongue is usually thick and stubby and often markedly indented along its gingival margin. The palate may be elevated or highly arched and the jaws contracted. There is a tendency toward hypertrophy of the tonsils with frequent tonsillitis and cryptic infection.

RESPIRATORY SYSTEM.

These patients usually breathe deeply and their respirations are numerically slow. They easily acquire colds, suffer with them for a long time and have difficulty in recovery. They are frequently the subjects of "winter bronchitis" with productive cough. If in their youth they have suffered severely from adenoids, imperfect development of the chest from lessened entrance of the air may occur.

CALORIC DISTURBANCES.

The temperature is usually subnormal. These patients suffer from general chilliness, shivering fits, or localized coldness. They are sensitive to the slightest draft or cold. Their extremities are sensitive to cold as well as being cold subjectively and objectively to touch. Associated with this coldness of the extremities one is apt to find rheumatic or neuralgic (so-called) aches and pains.

CARDIO-VASCULAR SYSTEM.

Cardiac rhythm is usually steady and sluggish with a pulse rate that is slow. Among the interesting features of this slow rate is its indifference to emotional or physical stress. The pulse rate is usually around 60, small and regular. They have a poor capillary circulation shown by a slow filling of the skin after pressure. They are subject to either

extreme of season being worse in winter with their cold extremities, "dead fingers" and sometimes very miserable in the extremes of summer heat. They usually do not have an increased blood pressure, but if hypertension is present then infiltration is causing a narrowing in the precapillary area. I know of no more interesting manifestations along cardiovascular lines than the inability of these people to react to tonic or cold hydrotherapy. If one asks the patient as to the habit of bathing they will usually state that they employ warm or hot baths and that after taking same if they become in the least degree chilled, they may suffer from rheumatoid neuralgic, arthritic and even migrainous pains and aches. Some will tell you that it brings on their lumbago and others that their torticollis ache or pain is invariably made worse. The mere fact that a patient will not react to an average or graduated cold hydrologic application should make one suspicious of the hypothyroid state.

DIGESTIVE SYSTEM.

In children the teeth tend to decay rapidly and fall out easily which is usually accompanied by red and inflamed gums, with recession. The milk teeth may be retained or may fall out. There is an unusual craving for sweets and in small children a tendency toward protuberance of the abdomen. ("Pot Belly").

In adults the appetite may vary from moderation to extreme but as a rule is easily satisfied. The food usually agrees with the patient but they all crave sweets. While they do not complain of digestive disturbances there is a tendency to tasteless, gaseous eructations after meals with meteorism and offensive flatus. Digestion and excretion are as a rule slow. There is a tendency toward thickening of the rectal veins and to hemorrhoids. The salivary secretion is usually lessened, that which is present is thick, viscid and the mucin is increased. (Stevenson and Halliburton). The mouth may be dry and sticky. The appetite is variable. Anorexia may be present. There is a craving for sweets at times and Hertoghe says that meat is distasteful. The gastric juice is usually reduced in amount. We may have at times hypochylia, hypochlorhydria and at times achlorhydria.

SENESCENCE.

Senile appearance is not uncommon. In elderly people this may be increased and may appear even in the young. There is a tendency to marked wrinkling of the face, especially around the eyes. In this connection in the younger cases we note a special tendency to the loss of hair, to a lack of energy,

to low sexual capacity and a premature tendency to varicose veins.

GENITO-URINARY SYSTEM.

This system does not present any definitely related symptoms that would indicate the presence of a hypothyroid state. There is tendency to polyuria with traces of albumin and sugar in the urine. Indican is frequently excessive because of the stasis and toxemia arising from the colon. In children nocturnal enuresis is often present. Sometimes a cystitis that is persistently difficult to heal will be greatly benefitted by thyroid showing a possible underlying absence of this secretion. In the male it is stated that impotence is not infrequent. I have seen several cases of this character distinctly benefitted by administration of the gland. Owing to the mental and nervous condition marital incompatability may not be an unlikely condition. I personally have never been able to lay to a lack of thyroid autoerotism or enlarged and boggy prostate and vesicles, although some writers claim that these are common in hypothyroid states. One should be very careful to eliminate a past diplococcus or other infection as well as be certain that they could not originate in coitus interruptus.

In the female the sex symptoms are much more marked. There is frequent delay in the appearance of the menses, that is to say, amenorrhoea with anemia. In these cases we note a very marked delay or development of the secondary sex characteristics. When the menses are established these patients are apt to not only be profuse but to have long continued menses and to sometimes establish habitual menorrhagia.

There are, however, cases in which menstruation starts early. And yet, with the development of this function the secondary sex characteristics do not make their appearance and in some middle aged women whom I have found suffering from hypothyroidism and who are poorly developed as far as their secondary characteristics are concerned if this failure of development could not have been laid to an early unrecognized diminution or absence of the secretion. Frigidity or a lack of the normal libido sexualis, together with sterility is not uncommon. In fact, I believe that hypothyroids in females may truly suffer from misogamy (morbid aversion to marriage) due to a failure to develop both the physical and the normal psychosexual functions. I have in mind two such women who improved tremendously under treatment but who had reached an age (late thirties) that prevented in my opinion a complete restoration of these functions. Had they been taken in their early life and been treated

properly I have always felt that the disability would have been removed.

MUSCULAR SYSTEM.

Muscular weakness and easy fatigue is an extremely frequent accompaniment of the hypothyroid state. These patients are apt to develop slowly muscularly and to be quite awkward. They tend to "slouch," when standing and to move slowly at all times. On account of their feeling of weakness and fatigue they tire very quickly when standing and are therefore apt to lean on some object for support. Owing to the deficient activity of the body and the tendency of the accumulation of waste material in the system, they are subject to general pains and aches especially in children. Here one must not, however, be led astray by the so-called "growing pains" but should realize that such pains must be carefully differentiated from those of toxemia and infection, and not ascribed to hypothyroidism until other causes have been eliminated.

METABOLISM.

The fundamental basic condition of hypothyroidism is the slowing of all metabolic processes in the body. With this there is retention and the body tends to take on an increase of weight and the patient inclines to obesity. This increased weight is due to the retention of metabolites and is not due to ingestion of excess of food for this may take place in cases that suffer from anorexia and who eat very little food. The retention of metabolites is favored by the very marked reduction in oxygen consumption. This lessens oxydization and prevents elimination of waste metabolites. In a similar manner protein metabolism is slowed, the nitrogens and uric acid retained. Carbohydrates tolerance is markedly increased. It is not uncommon to see no alimentary glycosuria after the ingestion of 200-300 grams of glucose. In other words, hypothyroidism tends to lessen the draft in the chimney and to increase the clinkers in the body. Children tend to be ill nourished, do not grow well, and do not put on weight. They are usually spoken of as "puny."

DIAGNOSIS.

One of the best diagnostic measures is a full knowledge of all the symptoms and to be constantly on the alert to the possibility of an underlying hypothyroid condition. To one who is constantly testing in a clinical way the basal metabolic rate many of these cases will be found and by going over the general, personal and clinical history many of the symptoms enumerated will be found. In some border line cases a small variation in the metabolic rate may sometimes prove of very great value, especially when taken in conjunction

with a few fairly well developed clinical symptoms. A clinical test by thyroid treatment is of course a most excellent diagnostic measure. I agree thoroughly with Lawrence when he says, "Fatigibility without organic disease, diminution of renal function, without nephritis, slowness of the pulse without anemia, but with lymphocytosis and subnormal temperature call for investigation of the endocrine condition of the patient."

TREATMENT.

With a correct diagnosis established the essential treatment is the administration of thyroid. Without this we cannot hope to definitely succeed in our treatment. The dosage may be from 1-10th grain up; usually 1 to 3 grains daily in several or one large dose. In cases that do not yield promptly to the thyroid there is a tendency to increase the administration too rapidly. I have seen cases that did not seem to do well on the administration of thyroid who were greatly helped by a small dose of the iodides or some organic iodine preparation. Do not for a moment believe that having diagnosed a case as hypothyroidism that it is a simple and certain matter to secure results by medication alone. You will sometimes see a patient fail to respond to the conjoint administration of both thyroid and iodine. These cases need the general stimulation that comes from the introduction of parenteral protein. For this purpose I have employed for years vegetable protein made in my own laboratory. This has many advantages in equal efficiency with protein of animal origin and with marked lessening of toxicity and hence danger to the patient. There is no particular diet for these states but a diet of vegetables and sea food tend to stimulate the thyroid gland. We therefore see that fish and seafood on Friday has its value and is to be recommended both for this and for many other reasons. Hydrotherapy is in my opinion one of the most valuable, if not the most valuable physical measure in the hypothyroid state. It should be administered expertly. These patients are extremely sensitive to the kind of hydrotherapy they need, that is to say, "tonic" or cold hydrotherapy. The hydrologist of experience will have very little trouble in training these patients to stand lower temperatures and secure reaction. The electric light bath, the salt glow or rub, followed by the various forms of showers, sprays, rains, douches and other hydropathic procedures will enable him to obtain the result he desires. I have found mechano-therapy of very great value, using the machines that manipulate the body and which by their action supply the muscular activity and increase the oxidizing powers of the organism without calling

upon the patient for the expenditure of any of his own force or energy through personal exertion. Auto-condensation is often valuable. In this process we heat the body and in this way stimulate all the glandular structures, increase oxidation and favor elimination of waste material. The sinusoidal current is of a special help to the weak abdominal wall and by its mechanical activity overcomes ptosis and stasis. But by far the best electrical treatment in these cases is the static wave currents. The treatment by this modality should consist primarily of heavy sparks to the spine, over the liver and sometimes over the long bones, followed by a heavy wave current with the electrode applied over the liver and epigastrium, lower abdomen or per rectum. The stimulation produced by the sparks and the intense mechanical, thermic and chemical changes induced by this treatment is extremely valuable to such a patient. It may be said in conclusion that a combination of all these measures will much more rapidly and effectively aid the patient than when given alone. The administration of thyroid, the iodides or parenteral protein becomes much more effective in small doses when supplemented by the use of physical measures which in themselves increase the absorption, stimulate oxidation, favor elimination and rouse and strengthen the central nervous system and thereby stimulate all glandular structures and the patients' thyroid as well. It will thus be seen that physical measures are a complement of the chemical measures usually advised in these cases.

Idiopathic Narcolepsy.—Adie is convinced that a Gelineau's narcolepsy is a disease sui generis. It is not very rare; most of the cases are mistaken for epilepsy, some for hysteria; it is certainly distinct from both. The name narcolepsy should, he says, be reserved for the idiopathic disease; it should not be applied to excessive or untimely sleep when this is a symptom of some other disease; confusion would be avoided by using the terms idiopathic and symptomatic narcolepsy. Other names that have been proposed for the disease have nothing to recommend them; the name narcolepsy should be retained. The "short narcoleptic attacks" of Friedmann are distinct from the narcoleptic of Gelineau, and as they were described later they should bear another name; the name pyknolepsy is suitable for them. The sleep in narcolepsy is indistinguishable from normal sleep. The attacks on emotion, in spite of contrary opinions, are highly characteristic of the disease. The terms cataplexy and cataplectic are suitable for them.

HYPERTHYROIDIA.*

By WALTER F. BOGGESE, M. D. Louisville.

The true cause of exophthalmic goiter is still an unwritten book, and much remains unknown. Our ideas have changed decidedly in the last few years, and from the fact that the true cause is not satisfactorily determined, its treatment varies according to the clinicians individual point of view. There is a strong tendency toward spontaneous cure even after one, two, or more exacerbations. I think today we may safely assume that true exophthalmic goiter is dependent upon some dysfunction of the thyroid gland, together with other general disturbances of the individual as a whole, and I think the theory of the disease being entirely due to hyperthyroidism should, with our present knowledge, be discarded.

While we know that you can produce an excessive thyroid secretion with large doses of iodine, producing an iodine hyperthyroidism, yet this does not invalidate the use of iodine in small doses in any variety of dysfunction. Though iodine is an essential ingredient of all potent thyroid products, and though Kendall's thyroxin (the most potent of thyroid substances) seems to depend upon its 60 per cent iodine content, it is iodine in its thyroid environment that is required when the thyroid apparatus is to be relieved of its surplus burden of function.

Thyroid minus iodine is impotent; with iodine it is thyroid as we know it—a substance at once a blessing and a curse in therapeutics and in sporadic—goiter depending upon whether it is intelligently used or abused. There is a "something" in thyroid substance which is more or less specific in the prophylaxis and treatment of sporadic simple goiter. The nature of this "something" is still a mystery, but in its action is unique and incomparable to anything else known in medicine.

Treatment: Considering the first medical treatment of hyperthyroidism, allow me to say most emphatically, there is in all cases of exophthalmic goiter, a medical treatment for these cases, whether the typical syndrome or the atypical cases that before the time of basal metabolism required so much time to diagnose. While I am not entirely willing to accept the ultra-conservative view of Braun and others that all cases of hyperthyroidism are curable by non-surgical procedure, and that the disease is one strictly outside the domain of surgery unless dangerous pressure symptoms or malignant changes set in. I believe the medical side should be given a fair

and intelligent trial before submitting to surgery.

We will for purposes of convenience consider treatment under: 1, General Measures, including (1) rest, (2) fresh air, (3) hydrotherapy and electricity, (4) dietetic, (5) medicinal, (6) organo-therapy, (7) serum-therapy, and 2, Local Measures, including (1) x-ray and radium, (2) cold applications, (3) injections in the gland, (4) the surgical procedures of ligation of one or more vessels, lobectomy, or thyroidectomy and sympatheticotomy.

General Measures: Rest, both physical and mental rest is clearly indicated for the important symptoms of muscular weakness, the disordered heart action, the nervous irritability and the increased metabolism. Of course the degree of rest must be determined for each type of case. In the severe intoxication a rigid Weir-Mitchell rest-cure is indicated; this implies isolation in a hospital, preferably in a separate room, with a tactful, patient and well-trained nurse in charge; complete bed rest must be insisted upon, with only the mildest of relaxation, as reading, knitting or basket work. Moderate massage is useful in cases in which absolute rest in bed is necessary. After distinct improvement has been noted, gradually increased exercise should be encouraged. Detailed instructions as to the kind and amount of exercise must be given to the patient, based upon the amount of work necessarily called for by his mode of life. Mental rest is just as necessary as physical. Fresh air is an essential of the rest treatment. The bed-room should be well aired, or better still, the patient should sleep out of doors in a sleeping porch.

Diet: The diet should be as varied and palatable as possible to encourage the patient to increase the body weight, or at least to regain weight lost through the increase of metabolic processes inherent in the disease. An over-feeding is to be carefully avoided, frequent small meals are to be preferred to three large ones. All indigestible food and condiments must be prohibited, and tea and coffee allowed only in very small quantities. Alcohol and tobacco must be excluded. The best results were obtained with a mixed diet. Even after surgical procedures these patients require close medical supervision for a long time. Any surgeon who removes the thyroid and assures the patients he or she will get well, is not playing square with facts.

Medical Treatment: In all cases of hyperthyroidism, and I might say in all cases of endocrine dysfunction, I think in the arsenical preparations we have a remedy of great value. A 5 grain ampoule of sodium cacodylate once or twice a week seems to be indicat-

*Read in Symposium on Goiter before the Jefferson County Medical Society.

ed in all cases. As to the use of iodine in these cases, one idea that has been advanced, and with some basis of logic and reason, is that iodine is contraindicated, and certainly it is true that large doses should not be given; but on the other hand many noted goiter authorities are now giving iodine in small doses in the form of Lugol's solution, containing 5 per cent iodine, 10 per cent potassium iodide in 5 minim doses once or twice a day. Forcheimer a number of years ago recommended highly exhibitions of quinine hydro-bromate 3 to 5 grams in combination of 1-2 to 1 grain ergotone 3 times a day. I have used this for years, especially where patients are undergoing rest treatment in bed, and I think with some benefit. For excessive nervousness, which is always distressing, I am in the habit of giving at 10 a. m., and at bed-time, a mixture of 5 gr. of iodide strontium, 15 grs. bromide strontium, with either 3-4 gr. luminol or 2 1-2 grs. baritol sodium in suspension. You will find that this combination gives the patients great comfort.

If the patient has excessive sweating, I add to this 10 drops tr. belladonna, or 1-150 atropine as a sedative effect.

One of the most troublesome symptom from the patient's viewpoint is tachycardia and palpitation and cardiac pounding.

Digitalis is not a drug that you can often use in these conditions, it does little, if any good, and increases the consciousness of cardiac pounding. In Graves disease digitalis is apt to produce with the increased discomfort, cardiac arrhythmia, and disturb digestion. Tr. of strophanthus is better to use in these cases and you can sometimes influence the rapidity of the heart without increasing discomfort. My favorite prescription is, and one I think that does more good, is a combination of digitalis 1-100 gr. nitro glycerine, 1-100 gr. strychnia 1-66 gr, with a teaspoon of syr. hydriodic acid every 4 hours. This is a combination that gives the patient a great deal of comfort. The ice pack over the precordia is of considerable benefit. Babcock recently called attention to the fact that you could relieve these patients of their pounding and their cardiac discomfort with aconit or veratrum. I personally have been a little wary in using these two drugs in Graves disease.

My experience with organo-therapy and specific serum therapy has been disappointing. In the x-ray and radium the general practitioner has a remedy of greatest value. There has been a great amount of discussion pro and con,—between the roentgenologists and clinicians on the one hand, and the surgeons on the other, as to the efficiency of the x-ray. My experience has been so far all that could be desired in some eight or ten cases in

the last two or three years, with the exception of one. I believe we are justified in every case of chronic or acute hyperthyroidism in the employment of the x-ray. You can take the statistics from Boston, Mayo Clinic, and many other recently collaborated reports, and you will find results that are satisfactory, and in some cases marvelous, and in the hands of capable men, practically without danger.

Freund, Cook, Seymour, Pfahler, and Grier, are among the many who have published their results from this form of treatment. Some are very conservative, others extremely radical in their claims. Seymour reports an improvement in seventy-three of eighty cases, treated with the target ten inches from the skin and one thickness of sole leather interposed; he recommends the production of only a slight erythema but without skin irritation; the dose is repeated in three or four weeks.

Pfahler and Zulick believe that the roentgen rays should be given a trial in all cases of Graves disease, because no harm is done and an operation may thus be avoided. They insist that both the thyroid and thymus glands should be rayed. An increase in body weight and a decrease in pulse rate are the first signs of improvement. The struma and exophthalmos are the last to manifest retrogression and in some cases show no appreciable change. They warn against too prolonged treatment because of the possible danger of hypothyroidism resulting.

Large series of published results are not lacking. J. F. Fischer, of Copenhagen, has recently published his results in 490 cases of Graves disease treated with roentgen rays. Holmes, Aub, and Means, of Boston, have recorded 360 cases treated up to the fall of 1921. Baetjer and Waters have reported more than 100 cases under radiation treatment. Loucks, of Detroit, has a long series with radium management. Similarly Heyerdahl has reported on the radium therapy of toxic goiters in Norway, and Nordentoft and Blume have recorded a series of 100 cases of Graves disease treated with roentgen rays. Especially in Germany, where the earlier suggestions to employ roentgen therapy for hyperthyroidism were received with skepticism, the use of radiation therapy for goiters is rapidly gaining ground. Negelschmidt has recently voiced the opinion that no cases of Graves disease should be operated upon until after a careful and thorough trial of radium therapy. In Canada, Bingham and Richards have recorded their results in 300 cases of toxic goiter treated by roentgenization.

Atkens has similarly treated a large series of cases with radium.

Grier claims to have cured 87.5 per cent of sixty-three cases of hyperthyroidism treated by him. The most favorable results were noted in simple hyperthyroidism, acute and chronic exophthalmic goiter; the basedowised goiter yields much less readily to this form of treatment. Waters reported his results in sixty cases and believed a more liberal use of this form of therapy worthy of trial. Even such a conservative surgeon as Halsted has tried x-ray treatment of the thymus gland in six cases of exophthalmic goiter refractory to double lobectomy with astonishingly good results. In contrast to the above enthusiasm Mackenzie expresses frank disappointment with the result in Graves disease, but admits that the trend of present experience is decidedly in favor of its further trial. Murray writes that "the application of suitable doses of x-ray to the enlarged thyroid gland has in some cases proved to be of great value. The gland gradually diminishes in size and the other symptoms subside. Atrophic changes in the secretory epithelium and both interstitial and intracapsular fibrosis appear to be induced by the action of the rays."

PROPHYLAXIS OF SIMPLE GOITER.*

By J. ROWAN MORRISON, M. D., Louisville.

Had I been asked to write a paper on this subject a year or eighteen months ago, I would have found it a very easy task. I would have said that the principles laid down by Marine, Kimball and their co-workers are such excellent examples that we should in no wise deviate from them. However, since reading such articles as the editorial in the American Medical Journal of Dec. 19, 1925, on "Goitre Prophylaxis" and many articles in the first class medical magazines, I find myself somewhat in the position of the old colored man who asked his white master to read and explain to him a passage in the Divine Scriptures. After the master had read and explained this carefully to the old darkey, he asked, "Do you understand it thoroughly now, uncle?" The old man replied: "No sir, I thought I knew something about it before, but I am all mixed up now sir."

That the prophylaxis of simple goitre consists in the proper use of the right quantity of iodine in conjunction with the ordinary rules of hygienic living, I am convinced. But the increasing tendency of physicians and the laity to use iodine in what seems to be a more or less indiscriminate way, causes one to halt

and check as far as possible the whole subject. I believe that the medical men in Louisville and Kentucky will generally say that we do not have, as far as their knowledge extends, a high percentage of endemic goitre except in certain sections in the mountains and in some of the western counties on the Mississippi River. As far as I am able to ascertain I do not know of any careful survey of this matter in Kentucky, although I have inquired in quite a few directions. Dr. Leon K. Baldauf did make an examination of quite a number of school children here in Louisville several years ago and I have asked him if he would not present these figures at this meeting tonight in discussion of this subject. So far I have not been able to ascertain the iodine content of the water in this vicinity.

Personally I have had no experience in the examination and treatment of any great number of these cases in school children. I have had in my personal practice quite a number of girls between the ages of eleven and fifteen with enlarged thyroid glands of the simple adolescent type. I have only occasionally come upon these cases with more than a slight enlargement or simple "lump in the neck." These patients I have advised to use a good hygienic form of living which includes a considerable amount of green vegetable food; to live in the open air as much as possible; avoid strain; and take a period of rest of one or two hours after returning from school, when possible. I have also advised that they take 5 or 10 drops of syrup iodide of iron three times a day (1-16 to 1-8 gr. iodine) for periods of two weeks in each month and to continue this over a period of from six to twelve months. Of the patients so observed I now know of only a few in whom the goitre has not diminished to about the normal size. In my own experience I have not yet seen any of these patients in my family practice who have gone on to exophthalmic goitre. The older physicians in this region, like Dr. Ap Morgan Vanee and my father, treated these cases in a somewhat similar manner especially believing that syrup of iodide of iron was an ideal remedy for them.

What is simple goitre? Hunziker has pointed out "the size of a normal thyroid is not known and for that reason no one can say where the normal thyroid stops and goitre begins." Marine says that goitre means "a hyperplasia of the thyroid gland. It does not necessarily mean exophthalmic goitre although many cases of simple goitre may later develop exophthalmic goitre." He applies the term simple goitre to "those thy-

*Read in Symposium on Goiter before the Jefferson County Medical Society.

roid enlargements formerly designated as edemic, epidemic, sporadic, physiologic or adolescent goiters."

Prof. F. de Quervain says: "It is possible, nevertheless, to make the following statement without fear of contradiction: "Edemic goitre is a reaction of the thyroid gland, partially hyperplastic and partially neoplastic. It usually begins in intra-uterine life, and develops particularly during the second or third decade. This reaction occurs more frequently in the female than in the male, and is probably caused by auto-intoxication from the intestine. The precise form of the goitre appeared to depend, to some extent, on hereditary influences. The geographical differences in the histological type of the goitre are probably due to etiological differences on the one hand, and hereditary or racial factors on the other hand. The introduction of iodine into the organism, in physiological quantities, is capable of arresting this reaction without doing any evident harm to the general economy of the organism."

So we see from the outset that the subject of goitre, even simple goitre, is a very complex one.

Probably many of us as physicians find ourselves in the position of the individual of whom it was said:

"A primrose by the river's brim,

A yellow primrose was to him

And nothing more."

Forgetting that there may be many kinds of primroses,—in fact speaking of primroses, they may be so especially differentiated that we may only find a special type in a very limited part of the country, as for instance the large beautiful type which grows along the C. & O. Railroad about White Sulphur and Hot Spring, Va., and found practically in no other locality. Also we should remember that locally here at the Ohio Falls we have a type of psoralea, a species of the pulse family, stated by such good botanists as Britton and Brown to be found only in this locality. Undoubtedly the question of goitre must present individual peculiarities in different localities.

What is the iodine requirements of the thyroid gland? According to Kimball "the normal thyroid contains about 5 milligrams of iodine per gram of dried gland, 25 to 50 milligrams (3-4 of a grain) being the total storage capacity. Therefore, the administration of a few milligrams of iodine daily over a period of 30 or more days will supply the deficiency, which, in large part, is responsible for the enlargement of the thyroid. The gland will start to enlarge as soon as the iodine content falls below one-tenth of 1 per

cent of the total amount of dried gland tissue. Another method is to prescribe 10 milligrams of iodostarin each week.

The work of Marine and Kimball is most convincing. Time does not permit the discussion of this matter and besides it is a subject with which we are all familiar. Quoting from O. P. Kimball on the subject: "The Prevention of Simple Goitre in Man:" "Of the cases classed as having simple enlarged thyroid at the first examination, and not taking the prescribed iodine, 127 or 13.3% underwent further enlargement, while among those taking the prescribed treatment only 3 or 3% underwent further enlargement." He also points out that: "In the practical appliance of the prevention treatment, one must keep in mind the three periods when simple thyroid enlargement most commonly occurs, viz: 1st fetal period; 2nd, adolescence; 3rd, pregnancy." On the other hand, quoting from the British Medical Journal of Saturday, February 14, 1925, on the subject: "Iodine Prophylaxis and Goitre." In New Zealand, Prof. C. E. Hereus and Dr. E. S. Barker in very carefully worked out experiments on goitre prophylaxis in children appear not to have had anything like the success as quoted above. For instance, in the study of 1,514 children under observation for one year at the Christ Church schools, we find in this school sodium iodide was given to children, eleven years and upward, 120 grains a year; those aged eight to eleven, 60 grains; those aged five to eight 40 grains a year. The method of dosage adopted was to give a weekly dose for ten weeks in each term (of 4 grains, 2 grains, and 1 1-3 grains respectively) in half an ounce of water. The results were these: the thyroid glands increased in size during the 52 weeks of the experiment, in 55% of normal children who received no iodine, and 39.6% of children who received iodine. In children previously goitrous the goitre increased in size in 43.5% of those who received no iodine and 21.4% of those who received iodine. In this group of school children, therefore the prophylactic use of iodine for a period of one year reduced the incidence of freshly acquired thyroid swellings from 55 to 39.6%.

For sometime it has been proposed that the best way to make a practical use of iodine would be to incorporate it in the drinking water of communities during certain periods of the year, or to supply it in iodized salt. These ideas certainly present much ingenuity if the amount of iodine so provided were the physiological amount of iodine required in that community.

It has been pointed out on frequent occas-

ions in the use of iodine in the general water supply, that so little of the iodine would be consumed by those who really needed it, and would have to be used by those to whom it might be harmful,—also it is rather costly. And now for instance Arnold S. Jackson in the *American Journal of Medical Sciences*, August, 1925, quoting from O. P. Kimball says, "That means that the city is paying \$450.00 for a needed 5 grms. of sodium iodine." Also in regard to the use of iodized salt the question arises as to the amount of iodine to be incorporated in the salt. Oleson says: "Inasmuch as human beings require a definite and constant supply of iodine in order to function normally, this quantity being estimated as a minimum of 300 milligrams annually, the Board of Health of Cincinnati has been advised to insure the ingestion of this amount by each person." This is obtained by using 5 grams (about 1 teaspoonful) daily of salt containing 1 part of iodine to 5000 parts of salt. The 300 milligrams of iodine thus given would leave out of consideration the iodine present in water and other food supplies.

On the other hand, de Quervain says "The quantity of iodine added to cooking salt should be kept within definite physiologic limits, that is to say, it should not exceed 5 milligrams of potassium iodide in a kilogram of salt. This dose corresponds to the consumption of 15 milligrams per annum on the part of the individual." He adds in a note: "We must notice that according to M. de Feollenberg's recent analysis the average quantity of iodine taken in with water and food is 11.4 mg. per annum in Chaux de Fonds (a district where goitre is comparatively rare) and 4.7 mg. in Emmenthal (where goitre is frequent). The cooking salt used in Bordeaux contains 5-13 mg. of iodine per kilogramme (corresponding to an annual consumption of 25-65 mg.) and where this amount is not available undesirable results have been noted."

The question naturally arises, would the small amount of iodine used in the table salt proposed by the Swiss Commission be sufficient to act as a prophylactic in mildly goitrous districts? On the other hand, there is much discussion now as to the propriety of using larger quantities of iodine on account of the possibility of producing iodine intoxication in adenomatous goiters. Jackson in the above quoted article by him shows that he has seen iodine intoxication produced by relatively small doses of iodine. Kimball in the *J. A. M. A.* on the subject, "Induced Hyperthyroidism" says that "In the period between March 5, 1921, and September 1, 1925,

there were 309 cases in which it appeared that the symptoms of hyperthyroidism had been precipitated or made worse by the use of iodine." In 210 of the cases, or 68%, the goitres were of long standing, average period being 18 years, and in each of these cases the glands were clinically or microscopically adenomatous. In six cases the only source of iodine had been iodized salt. All of these six cases were women past 40 years of age and each had a nodular goitre of long standing. Most of the cases were precipitated by self-medication or medical treatment probably not carefully applied. He is broad enough, however, to state that these six cases may be entirely coincidental and that too much emphasis should not be placed on this point. He further states: "In the medical treatment of goitre in adults we wish to emphasize the importance of care in the selection of cases; the use of small amounts of iodine for not longer than one month, and the necessity of close observation throughout this period."

There is very little evidence to show that adenomatous and exophthalmic goitres are common in school children. However, until more is known about the real pathology of goitre, it does not seem advisable to use iodine promiscuously without some considerable supervision of the patient to whom it is given.

Jackson, *Journal American Med. Sciences*, August, 1925, says in conclusion: "The number of cases of iodine hyperthyroidism has been greatly increased due to the popular demand for iodine in the treatment of goitre." Also: "Iodine should not be distributed promiscuously either in water or salt, but should be administered in exact amounts and under a physician's order."

"Even minute amounts of iodine are sufficient to initiate symptoms of hyperthyroidism in certain persons with adenomatous goiters."

"Iodine should be administered with particular care to children with adenomatous goiters; it should never be given to adults with this condition."

"Every child in the goiter belt between the ages of ten and twenty years should receive small weekly doses of iodine for the prevention or treatment of colloid goiter."

"Iodine hyperthyroidism is rare in persons under thirty years of age. It develops only in the presence of adenomatous goitre."

It would therefore appear to me that the administration of proper doses of iodine at proper intervals offers most in the prevention of simple goitre. However, in the light of the present agitation of this subject, I would

be strongly inclined to think that the best result would be obtained ultimately in this whole problem if we proceed slowly and study this problem as we go along, especially in such societies as the American Society for the Study of Goitre, and other similar bodies of men, and not be too abrupt in our advice as to the use of even iodized salt in communities where some control of its use cannot be had. And especially not to advocate any legislative act to compel people in certain districts or in general to take up the general use of iodine until we have studied this problem a little more thoroughly.

One of my medical friends said to me the other day when I told him that I proposed to state these views about iodized salt "that we were not endeavoring to treat goitre but to treat those that might become goitrous." I said to him "but how in the absence of an accurate survey and the known amount of iodine in our water and food, are we to always know the sheep from the goats?" And I dare say that quite frequently we will find a wolf (an adenoma) in sheep's clothing.

THE SURGICAL TREATMENT OF GOITER.*

By JOHN R. WATHEN, M. D., Louisville.

The surgical treatment of goiter is best divided into the pre-operative, the operative and the post-operative.

Since Plummer's memorable contribution of Lugol's solution to the pre-operative treatment, most other methods have either lost their popularity or have been discarded.

Rest in bed for week or more is advised, but prolonged stay in bed is not advisable or ever necessary in the great majority of cases.

Nerve sedatives are advisable and plenty of good food is valuable to overcome loss of weight and to combat the acidosis. The Lugol's solution by mouth or rectum and glucose solution intravenously will control the nausea and the vomiting in most cases.

The basal metabolic rate taken before we begin preparation for operation and again the day before operation will often be of aid in showing how much progress has been made and aid us as a guide to how the patient will probably stand the operation.

While it is difficult to offer an operative technique suitable to all types of goiters, nevertheless the basic principles are the same with only such modifications as are needed to suit the particular pathology encountered.

Most thyroid enlargements can be made to conform to a standardized technique with

slight variations in individual cases.

In those very serious toxic cases where a radical operation is not safe, it is well to do a polar-ligation under novocain anesthesia, but since the general adoption of Lugol's solution for preparation, fewer ligations are done in our work and many more of the radical operations are successfully performed.

The usual Kocher low collar incision is made and a large flap dissected to above the thyroid bone. The ribbon muscles are divided in the mid-line and the sterno-hyoids on each side cut high on account of the nerve supply.

In small goiters it is often not necessary to divide the muscles as retraction will allow sufficient exposure.

The technique I offer for your consideration is one that we have for the last year used with greater satisfaction than any we have tried, and has many points to recommend it.

We begin by hooking forward the superior pole with the index finger with little danger of injury to the blood vessels in this region. By applying two clamps near the upper pole of the lobe and cutting between them, leaving a small part of the upper pole attached with the blood-vessels to prevent the silk ligature from slipping, we are now able to use the other clamp to further dislocate the upper extremity of the lobe and dissect it loose as far as the upper edge of the isthmus.

It is surprising to note when the upper pole is first freed, how the entire gland can be readily mobilized and rolled inward to the mid-line.

The veins at the upper pole are less friable than at the lower pole, and when the gland has been freely mobilized the vessels and the nerve are better seen at the lower pole and carefully avoided.

Fine pointed artery forceps in sufficient numbers are now placed around the base of the lobe avoiding the possibility of clamping the main trunk of the inferior thyroid artery thus cutting off the branches to parathyroid granules.

If these artery forceps are properly placed, there is no danger of ever injuring the recurrent nerve.

The lobe is now rolled outward and the few vessels in the isthmus are likewise clamped before we cut through this structure close to the lobe which we wish to resect, thus leaving the anterior portion of the isthmus over the trachea as a protection against nerve injury in its anterior wall and also to prevent collapse of the trachea.

Next we resect the lobe from within outward, distal to the encircling clamps.

*Read in Symposium on Goiter before the Jefferson County Medical Society.

Before the clamps are removed we introduce a continuous mattress suture above as far downward as the encircling clamps and this small suture of number one plain cat-gut also closes the top of the resected gland with a continuous over and over suture.

The clamps are now removed and there is usually little or no hemorrhage to control if the sutures have been properly placed.

Both sides are resected if enlarged or contain adenomatous masses.

The ribbon muscles are now sutured and the skin closed by metal clips. Drainage with small rubber tube and cigarette drain complete the operation.

Elix, of veronol in warm saline is used by proctolysis, after operation in preference to morphine whenever possible Lugol's solution by rectum is used once daily after operation.

With proper preparation, this improved operative technique and the above after treatment, it is seldom or never necessary to use ice-packs and many of the older methods to combat any crisis following such operations on toxic goiters.

MEDICAL TREATMENT OF GOITER.*

By J. MASON MORRIS, M. D., Louisville.

By goitre we mean enlargement of the thyroid gland and the different forms should be looked at from different view points with reference to treatment.

First, we might mention the cystic goitre. Aspiration and ionization of this form of goitre is the line of treatment recommended by G. M. Massey, of Philadelphia. Now this ionization, electrical treatment will leave some sloughing of the remaining sac, which will require after treatment for several weeks.

I am sure, however, the object of this paper should be largely to deal with the treatment of the exophthalmic type of goitre. It has been demonstrated by some of the best writers and practitioners of medicine, that, owing to the varying and little knowledge of the pathogenesis of this disease that no single method of treatment will be sufficient for all cases. We also divide them roughly into two classes, first the highly toxic type where the ocular, cardiac and nervous systems predominate, and where the glands are distinctly hyperactive, and, secondly, the sluggish type in which the gland function is not hyperactive, regardless of its size.

Snow, Massey and other writers, report favorably upon the results of the galvanic and Morton wave current on various types of this disease. In the absence of hyperthyroid-

ism, ionization from potassium iodide, using the negative pole, has produced good results. These indicated conservative methods, with others not within the scope of this paper, should logically be tried, before resorting to radical surgery, except in those rapidly developing cases of the toxic type, in which surgery should not be delayed.

Application of cold, either the Leiter coil or the ice bag to the thyroid gland, and the precordium serves to slow the heart. Occasionally, an ice rub may be needed, a wet pack for a period of one hour, combined with the Leiter coil to the spine, followed by a hot bath, 70 to 80 degrees F., will often allay the tremor and palpitation.

Organotherapy in the treatment of goitre, brings us to consider the use of iodine and what place it has with reference to treatment. Bauman's discovery of iodine in the thyroid gland, stimulated a great amount of work, along that line of research. The fact that iodine cannot always be found in the thyroid in healthy individuals, has led some to doubt whether this element is a necessary or important constituent in this gland. From the beginning of the investigation there has been evidence that the activity of the thyroid when used as a drug, depends largely on its iodine contents for its physiological effect. We have therefore come to realize that in the treatment of toxic goitre, the administration of iodine is of the greatest importance. It is well known that many cases of hyperthyroidism improve and become temporarily well under perfect rest in bed, the proper use of some form of iodine, Lugol's solution probably being the best. This improvement in most cases, is only temporary, the symptoms complex returning at intervals of a few months to a few years. As to mental, nervous and heart symptoms all of which are present to a marked degree in a toxic goitre, the same conditions of rest together with some preparation of digitalis, iodine and some nerve sedative is sufficient.

The regime which is perhaps most useful in the management of patients with toxic goitre, is about as follows: After the diagnosis has been fully established, the administration of Lugol's solution of 5 to 10 drops daily after meals, well diluted with water, patient kept at complete rest in bed, metabolism determinations made at regular intervals of three to six days. The lowest level of metabolism curve is reached in from 1 to 2 weeks, and if surgery is to be done it is best at this low level of metabolism wave that it should be done.

SUMMARY.

First, some patients recover from this dis-

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ease without any treatment, other than the avoidance of heavy work, nervous excitement or mental strain. Such cases, however, are exceptional.

Second, although temporary recovery may occur, in untreated patients, there is a marked tendency for the disease to recur and each recurrence is likely to result in further cardiac injury.

Third, roentgen ray treatment produces a certain result in a number of these cases which seems to equal in effect of that of surgery. In many cases, however, it apparently has no effect.

Fourth, following partial thyroidectomy, all the symptoms may reappear after the 6th or 8th year of apparent health.

Fifth, the administration of iodine to the patients is a valuable pre-operative measure as it has always followed by a transient decline in basal metabolism.

Finally, the ideal for exophthalmic goitre, that is the removal of the primary cause has not yet been discovered, as we are still in the dark concerning the real changes, which are responsible for the altered function of the gland.

DISCUSSIONS

Irvin Abell: I am sure we have all benefited very much by this most interesting and excellent presentation on the subject of goiter. My experience having been limited practically to the surgical aspects of the condition, my few remarks will be directed to that phase of the subject.

Much has been said about the treatment of goiter, medical and surgical, and about the toxic types, etc., but little about the adenomatous form. With increased experience and observation I feel that all adenomata of the thyroid should be surgically removed regardless of size or the time of life at which they appear. It was taught for a long time that the adenomata showed a tendency to become toxic toward middle life. Repeated observations prove that while this is true, it is also a fact that they become toxic much earlier in life.

With one exception every case of malignancy of the thyroid that has come under my observation was safeguarded on an adenoma. In some of these cases malignancy was so far advanced that it was recognized readily at the time the patients came under observation, others were not recognized at the time of removal of the adenomata but were demonstrated by microscopic examination. It naturally follows that the patients who were operated upon early were the only ones who recovered.

Dr. Keith is to be congratulated on the splendid result secured by roentgenotherapy in the case he has presented. The fact that adenomata

have a decided tendency toward malignancy, the fact that they do become toxic,—and according to my observation the toxicity of adenoma is more depressing and more dangerous than that due to hyperthyroidism,—the fact that the toxicity of adenomata is insidious in its development, frequently leading to an accompanying myocarditis and other cardiovascular manifestations, in my opinion the danger to life is greater than in other types of goiter. For these reasons I personally think every adenoma should be removed regardless of the time in life at which it appears or the size it may have attained when the patient comes under observation.

I wish to compliment Dr. Wathen on the splendid technique he has perfected; the factors which make for safety in the treatment of goiter, as he has stated are to be grouped under three headings, the preparatory treatment, the operation itself, and the post-operative management. Prior to the introduction of Lugol's solution we used the roentgen-ray routinely as preparatory treatment for operation. In one series of twelve cases treated by the roentgen-ray alone in the hyperplastic toxic type of goiter, we have five that were apparently completely cured; five others were definitely improved; two were uninfluenced by the treatment. In a series of thirty-eight consecutive cases of hyperplastic toxic goiter subjected to resection, all of them treated pre-operatively by the roentgen-ray, all thirty-eight showed under the microscopic definite hyperplasia, there being no reduction of the hyperplastic tissue in the gland itself. This has always raised a question in my mind as to the actual value of the roentgen-ray in the treatment when definite hyperplasia exists; yet in some instances in the earlier course of the disease it is difficult clinically to determine the exact condition present. Since the introduction of Lugol's solution we have discontinued the use of the roentgen-ray as a pre-operative measure. We give one dram to a dram and a half of Lugol's solution in each twenty-four hours for ten days to two weeks preceding operation, keeping a careful check on the metabolic rate. There are some patients who do not tolerate Lugol's solution, and in these we resort to ligation. I do not know the percentage, but am confident that we do not perform one ligation now where we formerly did ten in preparing the patients for resection.

Study of the renal function, study of myocardial efficiency, with rest and the administration of Lugol's solution are the prime considerations in the pre-operative preparation.

In the operation for the relief of the hyperplastic toxic types I have not been successful in completing the operative procedure under local anesthesia as shown by Dr. Wathen. We have

continued to employ gas-oxygen analgesia and local anesthesia with one-half of one per cent solution of novocaine injected at three points, the upper pole of the thyroid, the middle of the sterno-mastoid muscle, and along the line of incision. It is especially true that the technique Dr. Wathen has described is a definite advance in that direction if we can secure the confidence and co-operation of the patient, which he undoubtedly does, but which I have not been able to do, at least to the extent of eliminating the necessity for a general anesthetic. Brevity of the operative procedure with as little trauma of the gland during the operation as possible unquestionably make for success. As Dr. Wathen has stated, however, a sufficient amount of the gland should be removed in every instance to avoid the necessity of secondary operation where it is not absolutely prohibited by the condition of the patient.

In the after-treatment no definite rules can be formulated, and yet all roads lead to Mecca. Personally I believe in absolute quiet of the patient obtained by the administration of morphine in sufficient dosage to obtain that quietude. We instruct the nurse to administer 1-6th to 1-4 grain of morphine hypodermatically every two hours if necessary to keep the patient quiet. Second in importance is the ingestion of abundant fluids. In my experience few of these patients will be able to tolerate a great quantity of fluid by mouth or rectum. Saline solution is used by subcutaneous infusion, and in highly toxic cases glucose is added. A careful check should be kept on the temperature, and where there is a rise to 101 degrees F. or over, ice packs should be used. We do not hesitate to use antipyretics if the ice packs do not satisfactorily control the temperature.

By the utilization of these factors making for safety, the mortality from the surgical treatment of goiter has been reduced to the point where we have no hesitancy in advising this method of management. Certainly the removal of a large amount of the hyperplastic tissue does rapidly restore the patient to the proper economic basis, and in the larger percentage of cases with which we have to deal the economic factor is one which merits consideration.

R. R. Elmore: There is only one phase of the subject that I particularly wish to discuss and that is the prevalence of goiter. In very few sections of the country has there been any effort made to ascertain the prevalence of goiter. The general idea prevails that along the seashore goiter is seldom found. As a matter of fact a recent survey of Manhattan and the Bronx (New York) revealed the presence of goiter in twenty per cent of school children from nine to fourteen years of age.

Is there any reason to believe that goiter is

increasing, or is there good reason to believe that goiter should increase? Assuming that the deficiency of iodine in the water and food is associated with the prevalence of goiter, it is reasonable to state that there is and will be a continuous increase of goiter unless some measures are adopted to prevent it. The original source of iodine in the soil presumably was oceanic and this supply is being steadily exhausted. Every year a small portion of it is taken away from the soil, washed away by the water and taken away by the products of the soil, and unless we meet that situation,—assuming it is true that there is a constant relationship between the deficiency of iodine in the food and water and the development of goiter,—we can well understand that goiter is going to increase.

As to the relationship of exophthalmic goiter to simple goiter: This has been proven in many ways. For instance, in the defects found in drafted men during the recent war the frequency of exophthalmic goiter bore a constant relationship to the frequency of simple goiter. As an illustration, in the lake regions of Ohio where the incidence of goiter has always been high, the number of men rejected for simple goiter was high, and the number of men rejected for exophthalmic goiter was similarly high. It is furthermore certain that exophthalmic goiter bears a constant relationship to the height of civilization. Among animals and also among the partially civilized lower tribes exophthalmic goiter is unknown. As we ascend the scale of civilization the frequency of exophthalmic goiter becomes very noticeable.

Personally I am very much interested in the prevention of goiter. I would like to see our health board in Kentucky encourage and develop by educational means and not by compulsory legislation the idea of routine administration of iodine to school children between the ages of six and fourteen years. A small quantity of iodine could be given either once each week or every day for ten days twice a year. I believe such a measure would be helpful and it would be healthful also to the parents of today and tomorrow from the standpoint of both mental and physical development. For instance, in the mountain regions of Kentucky the facilities for mental improvement are limited, and the people of every town, district and county are looking to critical and far-seeing organizations like the State Medical Association and the Jefferson County Medical Society to protect them in matters of health. I feel that we are derelict in our duty if we do not make some effort to do this.

Oscar E. Bloch: My experience in the surgery of goiter is strangely parallel with that of Dr. Abell, and I have come to the same conclusion

that he has expressed, i. e., that all adenomata of the thyroid should be removed for the reasons he has given. I have also had the same experience as Dr. Abell with local anesthesia, which Dr. Wathen so beautifully described. I have not been able to get along with local anesthesia, or even nerve blocking, in operations for goiter, particularly in the exophthalmic type.

As to the postoperative treatment: I believe in giving the patient an abundance of water. I have never found it necessary to use glucose solution: I always give the patient large quantities of ice water by mouth as soon after the operation as she can swallow without discomfort, and I also give water by rectum especially if the patient is unable to retain water given by mouth or there is other reason that presents the taking of water by the stomach.

The use of ice first advocated, I believe, by Dr. Crile, has proved to me a most valuable procedure: When the temperature rises to 102 degrees F. I apply an ice pack over the precordium. If this does not cause reduction of temperature and the patient does not improve, I then apply a general ice pack including the entire body.

As to the use of Lugol's solution in the preoperative preparation of the patient: As a rule I have found this a most satisfactory drug. However, in a recently observed case no result was noted from the administration of Lugol's solution. I then tried quinine hydrobromate and ergotine without success. Finally I gave the patient pituitrin in five drop doses repeated every six hours. Under this treatment she improved and operation was performed without untoward incident. Dr. Horine saw the patient for me and suggested that she be thoroughly digitalized before operation. This was also done and she went through the operation in splendid condition.

O. O. Miller: There is only one point I wish to discuss, and that is the apparent antagonism between pulmonary tuberculosis and hyperthyroidism. During the last eight years about three thousand patients with pulmonary tuberculosis have been admitted to the Waverly Hills Sanatorium. In only one of these cases did we have reason to suspect a co-existing hyperthyroidism, this suspicion being based on the persistent tachycardia, slight exophthalmos and a palpable thyroid. The antagonism to pulmonary tuberculosis in the presence of hyperthyroidism may possibly be explained by the vasomotor dilatation which occurs in the latter condition.

I have under observation at present one patient with arrested tuberculosis who has slight hyperthyroidism; also two patients operated upon for hyperthyroidism and who subsequently developed pulmonary tuberculosis.

THE FORUM.

To the Editor:

I have read Dr. Jenkin's article on "The Making of a Doctor" in the January number of your valuable Journal. It and the comments prove to be very interesting reading.

I have traveled the professional road now for over 36 years. In this article I can feel the very pulse beat of the profession. I can again imagine myself a student under Drs. Carl Weidner, Wathen and Kelly. I could name all my preceptors, for each left an indelible impression on me individual to themselves. While I enjoyed all the articles, and believe that many points have been brought out, that have been dormant for many years, still, I especially enjoyed and agree with those of Drs. Carl Weidner, Harry J. Phillips and D. P. Hall as saying the things that I would say, were I competent. You know a good speech is often counted a good one, because they agree with your sentiments. Well theirs, is my sentiments.

But something has been left out of all that multiplicity of words. Just what it is, I am unprepared to state. But the deep feeling of responsibility, is not impressed on our student body of today, apparently to me, as it was in the years of '89 and 90. The sacredness of the profession has vanished, and commercialism has entered. Conceit predominates the new graduate. I know, for I have a son who graduated last June. I dare not attempt to lessen that conceit, God knows it will be jerked out of him soon enough. But what puts it there? The stuff Dr. Hall speaks of, probably so.

Now I have talked to some one, so will close.

Fraternally,

G. B. O'ROARK.

To the Editor:

I have read with much interest the recent article by Dr. W. A. Jenkins of Louisville, upon a subject of the first importance to the medical profession and of vital interest to the laity, "The Making of a Doctor," title of the subject of course, meant the intricate process which is utilized to bring to man's estate a full-fledged M. D. and then the manifold elements which must then go to mature this embryonic condition into a very capable factor for good to the human race at the same time making it possible that he can succeed in the acquirement of funds to exist and possibly support a family.

I am not going to try and attempt at this time to discuss this great subject or comment upon the splendid article presented or analyze the fine discussions that followed the presentation. It is very natural that most of men who really think very much sometimes imagine that they may have something worthwhile for the relief of the other fellow to listen to.

I believe that if our honorable secretary and those in control of our Journal would open its pages and set apart a few columns to the purpose of stimulating the men who are rarely ever heard or write their views for this part of our Journal we would have some interesting and illuminating information. I appreciate the fact that it would possibly be best to limit the space for each to a few hundred words and also to those who are members of the Association. There are many good men who have never had a paper published in the Journal who could perhaps tell almost as much as many who have. I hold out this as a suggestion. A Forum for open discussion, not exactly according to Hoyle, but for the good of the order, coming from one who has had the privilege a number of times of having had articles and discussions appearing in the Journal much to my own edification if it was not for any one else.

Very truly yours,
VERNON BLYTHE.

To the Editor:

You have invited comment on the subject discussed so fully in the January number of the Journal, which was labeled "Medical Education," but was to a large extent concerned with the lack of physicians in rural districts. This has become a favorite subject in the last few years, and I am sure that this comment will contain no more "Bunk" than the average of these papers that I have read. It could not!

The professional educator has been heavily scored by all writers as one who has no personal knowledge of the problems involved in making a doctor. Yet the vast majority of the articles have been written by men who are specialists in cities and have had no personal contact with general practice in the country for decades. May we not conclude that the guilt may be equal?

Conditions in rural communities have changed materially in the last few years. More than half of the country stores and shops have been closed or are making a meager living, where formerly they were prosperous. Yet no one raises a cry that the poor man must go to town for his supplies, though these are needed oftener than medical attention. The telephone has largely displaced the runner who went after the doctor, and the automobile has eliminated miles and hours of travel. The country doctor can make the call and return in less time than it formerly took to summons him.

Many tears are shed over the plight of the poor boy who can not finance his education to the end of medical school. The remedy offered is to cut down the entrance requirements. This is naive, because the colleges of our states have hundreds of boys who are now paying their entire expenses in college by real work and not

by athletic ability. However, it is almost impossible to do this in a medical school, since the expenses are much greater, and the hours of work much longer. Therefore any real relief must of necessity come in the medical school. I make no claim to a solution of this. Also we must remember that formerly the students whom we called poor would now not be classed as such. They were the sons of farmers owning their land, and while ready money may have been scarce, there was some real wealth behind them in the form of possessions and traditions. The young doctor would return, and live off the farm while developing his practice.

Another inconsistency: The old time doctor is applauded, and justly, for his ability, sympathy and skill, but they forget that, like McDowell, he took care of his own specialty work also. In fact many of them worked out the principles now used by the specialist. The desire is to make the road to the degree of medicine shorter, and at the same time further restrict that practice of a specialty. This has the odor, rather the faint aroma, that the real wish is not to produce again the old time doctor, but to place at every cross roads a man with a medical degree who will be able to send the patient to the proper specialist for anything except child birth or acute rhinitis. Most graduate nurses seem already qualified for this task, and exercise their ability.

Time and time again we see the charge that the young graduate in medicine does not know how to make a diagnosis or physical examination, but must rely upon tests. This is doubtless an observation on the work of interns. Is it true? When the intern calls his chief and reports a case of fracture of a bone he is told to have an x-ray made at once. Should the case be coma or convulsions, the request is made for blood chemistry and Wassermann. If the patient has abdominal pain, a blood count is wanted. The poor fellow is then criticized because he does the things that he thinks the chief will want. What do you expect? I have recently been over the road, and I speak from experience. Besides, it is most untrue that the younger men can not take histories and make examinations. They can do it far better than the embryo medic of twenty years back.

In the discussion of Dr. Jenkins' paper a case was cited in Grayson county where a patient was required to pay \$15.00 for transporting a doctor to his home, and \$18.00 for the fee. Doubtless the doctor spent the better part of the day making the trip, if special transportation was required. More power to him. This compares favorably with the fees of the city specialist. An examination requiring one or two hours in his office will range from \$25.00 to \$100.00. And it must be remembered that more

than one patient will be under examination in this time.

Though I am located in a country town, I am one of the recent products of the present malignant medical education, who are so roundly abused for preferring to locate in the city and engage in the practice of a specialty. City practice is more remunerative, and urban living conditions are better than those of the country, especially in the matter of education. Also to receive favorable recognition in the profession, (aside from a few pages of "sob stuff" at some medical meeting) the doctor must specialize. And to suspect that a lower standard of education will remedy this is foolish. As proof, the city is the mecca of quacks and short term doctors.

To the solution: Given time the condition will take care of itself. True there is a shortage in some places and an over supply in others. The recent graduate needs to make a living, and has not a farm to live on until practice comes. It is conceded that the people in the rural districts should have good medical care. If some of those who have saved enough to live comfortably, have educated their families, and have learned much from experience, would move to the country cross roads there would be no such problem. Socialism you say? No more so than to demand that the young doctor bury his entire life in the locality where the older one could live in comfort, and retain his former standing.

Still a better way to solve the problem: Require every specialist who writes on this subject to spend ten years in general practice in the country where the need is most acute and remuneration the most scarce.

I hope that I have not left the impression that I am antagonistic to the practice of the specialty, or am envious of any of the profession. Such is not the case. We need men to take care of every branch of medicine, and the subject is too big for one to shoulder it all. I admire and honor the leaders and appreciate the friendship of such of those that I know. My purpose is first to prove many of the premises taken to be true are not, and that many of the truths are only half truths. Secondly, I wish to show the view of the young doctor who believes he has earned the rights to choose where and how he shall spend his life in work.

Very truly yours,

W. B. ATKINSON.

To the Editor:

Page three, January 1927 edition, Kentucky Medical Journal by coincidence contains a request for an opinion in regard to medical education and the Commission to Study Crime in Kentucky wants to know what can be done

from the medical standpoint to reduce crime in the Commonwealth. In my opinion both questions are based entirely upon the character of man himself as a product of ninety per cent heredity, (a misunderstood term), and ten per cent environment (education). The student of Kentucky Medical history is impressed by the fact that the leaders in regard to new thought and inventions, where the higher faculties are essential, such men as Ephraim McDowell, Dudley, Bush, Peter and many others, were men who came of distinguished families, (families which have advanced society by moral and intellectual development) and were the products of a pure race. This is a law that any intelligent person will find to be true of the history of any people or class of men of achievement.

Medicine declined in India when the flaxen haired conquerers, notwithstanding their caste system, turban, etc., became dark skinned and black. Thucydides noted the decline of the Greeks as they became mixed in blood. In Costa Rica, where portions of the country have been settled by pioneer Spaniards from that of Spain which was overrun by the Moors, I have found certain reversions of distinctly Moorish characteristics. In Jamaica, there are reversions of type to prior races, white, black and Indian in the same family where I had every reason to believe the children were legitimate. I have found in Central and South America, the Indian and white race mixtures (mameluco), being as a rule superior mentally, physically and morally to that of the negro and white race (mulatto); but both mixtures far inferior in every respect to the superior race in the mixture. Investigation of this subject still further, I found that there is a small tribe of Indians called by the Spanish, Chericocita (meaning little cherry, from a peculiar wood found in this island resembling cherry), that inhabit a small island in Admirant Bay, Columbia, South America, who according to their custom and tradition, require two braves to accompany a male visitor until he leaves the island, to prevent conversation with their squaws, are a wonderful little tribe, similar to the Japanese in physical characteristics, very intelligent, robust and noticeably free from disease and malformations.

Our troubles date from 1840 beginnings of indiscriminate large immigrations. The immigration laws of the past and present unfortunately do not require a thorough investigation of immigrants as to hereditary insanity, etc., and purity of race.

The King James translators of the Bible had to deal with the then scarcity of the English tongue, not as many words in use then as now. The case of the old old Anglo-Saxon language, which had been used in prior translations, ad-

jectives like good for instance had been used as collective nouns, goodan, the collective, meaning all good things, finally became to represent diety, God. In my opinion, the "sins of the fathers" being transmitted to the third and fourth generation, the translation was a literal collective translation, a free translation as to meaning would be "the mental, physical and moral tendencies of our fathers." The theologion and laity have interpreted the passage to mean syphilis, the result of moral transgression physically and do not consider that the word is used in a plural sense. The translation, I have given would be in accord with the scientific authorities of today on the subject of hereditary diseases.

As to racial reversion, our court records of late impress the public with the necessity of recording births correctly as to race. The need of a "Council de Salubrity", somewhat similar to France.

As this is written for the purpose of stimulating an intelligent discussion of a vital national problem, I am forwarding a copy to the Chairman of the Crime Commission, also the publication of my religion, Western Recorder, hoping the publication will cause discussion.

Very truly yours,

GEORGE HUMPHREY TICHENOR, Jr.

4222 West Madison St., Louisville, Ky.

BOOK REVIEWS

SKETCH OF THE HISTORY OF THE MAYO CLINIC AND THE MAYO FOUNDATION. Octavo volume of 185 pages, illustrated. Philadelphia and London: W. B. Saunders Company, 1926. Cloth, \$3.50 net.

This work is a sketch of the establishment, organization, and development of the Mayo Clinic and Mayo Foundation during the first quarter of a century of its existence. The facts are set down in chronological order and policies and managerial procedures are outlined, as well as the all-important work of the care of the sick.

There are chapters on Dr. and Mrs. William Worrell Mayo; youth and education of William James and Charles Horace Mayo; the beginning of St. Mary's Hospital, development of surgery, general medicine and medical specialties, development of laboratories associated professional services, division of records, division of correspondence, division of publications, business management, general service, present organization of the Mayo Clinic, relationship of the Mayo Clinic to other organizations, the Physicians' and Surgeons' Club; the Mayo Foundation for Medical Education and Research.

WOMAN'S AUXILIARY NOTES

McCRACKEN COUNTY ORGANIZES.

The Woman's Auxiliary of the McCracken County Medical Society was organized on the evening of March 22nd in the parlor of the Paducah Woman's Club, following the "Ladies Night" dinner of the McCracken County Medical Society.

Mrs. V. A. Stilley, President, and Mrs. A. T. McCormack, Secretary-Treasurer of the Woman's Auxiliary, Kentucky State Medical Association, guests of the society, explained most interestingly the work being done in other counties of the state, also in other states, and were most enthusiastic over the organization of an Auxiliary in our county.

Mrs. Stilley presided at the meeting which resulted in the election of the following officers:

President, Mrs. J. T. Reddick; 1st vice-president, Mrs. J. N. Bailey; 2nd vice president, Mrs. C. P. Burnett; 3rd vice president, Mrs. L. E. Young; 4th vice president, Mrs. P. H. Stewart; secretary, Mrs. J. B. Acree; treasurer, Mrs. Horace Rivers.

Mrs. McCormack read the suggested constitution and by-laws as published in the Woman's Auxiliary Number of the Kentucky Medical Journal (December issue) which has been adopted by many other County Auxiliaries. The motion to adopt the Constitution and By-laws as read, with an amendment of "or other component societies of the American Medical Association, now residents of McCracken County," to Article 111, carried unanimously.

The Treasurer collected dues from fourteen members.

The meeting then adjourned subject to the call of the president.

BLANCHE ACREE, Secretary.

Charter Members McCracken County Auxiliary.

Mrs. J. B. Acree, Mrs. J. N. Bailey, Mrs. Vernon Blythe, Mrs. Frank Boyd, Mrs. C. P. Burnett, Mrs. G. B. Froage, Mrs. E. B. Goodloe, Mrs. R. C. Gore, Miss Holt, Mrs. A. F. Jones, Mrs. F. M. Munson, Mrs. L. P. Molloy, Mrs. Bob Overby, Mrs. J. T. Reddick, Mrs. Horace Rivers, Mrs. P. H. Stewart, Mrs. B. A. Washburn, Mrs. E. B. Willingham, Mrs. L. E. Young, all of Paducah, Kentucky.

MARSHALL COUNTY MEETING.

Despite rain, mud, and high water, the Marshall County Auxiliary held its first spring meeting on Monday, March 21st. The opening sentence must be taken literally. It was raining, there was mud, and the river was so beyond its banks that crossing in cars was a matter of impossibility. Truly the old adage, "Where there is a will there is a way," was demonstrated in reality by the Marshall County physicians and their wives.

The Secretary of the County Medical Society, Dr. L. L. Washburn, notified the members across the river to come to the water's edge and there they would find a driver with wagon and team to ferry them across. Ludicrous, albeit a laudable sight, to see the good doctors and their wives going back to pioneer methods of traveling, and demonstrating the fact that the perseverance of our forefathers in a noble cause had been inherited by sons and daughters and that the Spirit of '76 is still alive in Marshall County. One good doctor and his wife arrived after luncheon had proceeded a good way. Fired by the zeal within them to advance the cause of the profession, they had braved the troubled waters, their arrival causing a round of mirth, merriment and good will. Luncheon was served at twelve o'clock to the doctors and their wives. Dr. and Mrs. A. T. McCormack were honor guests, both making interesting and instructive talks during the hour.

Following the luncheon, meetings were held in the Court House—the doctors convening in the court room and the Auxiliary in the Circuit Clerk's room. At the Auxiliary meeting, Mrs. McCormack held a round table discussion of the aims and means of carrying on the work, and gave many helpful thoughts regarding it. Plans for "Paint-Up and Clean-Up Week" are under way. Also, plans are being laid for a Health Pageant to be given on the streets on "Tater Day," a celebration held in Marshall County only. Three new members were added to the roll. After prayer by Dr. McCormack, the meeting adjourned to meet the third Wednesday in April.

NELLE E. WASHBURN, Secretary.
(Mrs. L. L. Washburn)

HYGEIA.

The President has appointed Miss Mayme Sullivan, 532 West Main Street, Louisville, State Chairman of Hygeia Campaign. Mrs. P. E. Blackerby, Chairman since last November, has found it necessary to resign because of other obligations.

If your Auxiliary has not yet started a determined effort to increase the circulation of Hygeia in your County, Miss Sullivan will be glad to assist you in this enterprise of furthering the work of the American Medical Association.

Dr. Wendell Phillips, President, American Medical Association, at the annual meeting of our National Organization in Dallas last year, urged that every member of the Auxiliary make it her duty to help place Hygeia in every home, every doctor's office, every public school and every public library in her county.

MEDICAL HISTORY.

Have you collected the data concerning the early work of the physicians of your family for

the "Medical History" of your County and State? This is Auxiliary work of the most helpful type. Some valuable material has already been received by the Secretary of the State Medical Association, for which he expresses grateful appreciation.

A vault in the safe has been assigned for the careful keeping of these records so greatly desired by our State Medical Association.

Send your material through the Secretary of your County Auxiliary or directly to the Secretary of the State Medical Association, Dr. A. T. McCormack, 532 West Main Street, Louisville.

THE NATIONAL MEETING.

Are you going to the National Meeting—the annual conference of the Woman's Auxiliary, American Medical Association, to be held in Washington, May 16-20? If so, the Kentucky delegates, Mrs. S. W. Bates and Mrs. A. T. McCormack, will be glad to acquaint you with members from other states and to assist you in any way possible.

OUR MEMBERSHIP.

Our membership is steadily increasing. However, we are far from the total Kentucky may claim when all the women of the profession have affiliated with the "Auxiliary."

In order that all the women of the profession may know about the Woman's Auxiliary, our First Vice-President and Chairman of Organization, Mrs. Robert L. Woodard, Hopkinsville, has, with the help of an able Committee, prepared a series of three letters which are being sent to every wife, mother, daughter, sister or widow of a physician in Kentucky whose name and address we are able to secure. If you or your friends have not received these letters, will you not notify the Secretary, Mrs. A. T. McCormack, the Mayflower, Louisville, in order that your copy may reach you at the earliest possible moment?

NOTICE.

Be sure to keep your copy of the "Woman's Auxiliary Number, Kentucky Medical Journal," December 1926 issue for reference. It is valuable.

THE WOMAN'S AUXILIARY NUMBER.

Letters of congratulation upon the December issue of the Journal, "The Woman's Auxiliary Number" continue to arrive. From among the numerous complimentary comments received from all over the country, a few are culled from the letters of some of our own members.

Irvin Abell, Louisville, President: "The Woman's Auxiliary Number, Kentucky Medical Journal, is fully worthy of the commendatory expressions which it has elicited. Representing the pioneer work of Kentucky women it rightfully takes its companion place in the long list of the pioneer productions of the medical profes-

sion of Kentucky, the members of the latter being justly proud of the worthwhile accomplishment of the Woman's Auxiliary. It visualizes the realm of possibilities open to the latter organization and presages a wide development of future activities."

R. Julian Estill, Lexington, President-Elect: Will you please convey to Mrs. McCormack my sincere congratulations upon the splendid Woman's Auxiliary Number of the State Medical Journal. I do not see how it was possible for "amateurs" as they were so modest as to style themselves to edit such a splendid issue of the Journal. I feel that it was a tremendous success and for one I would like to suggest that we make it an annual affair, or if they do not care to undertake such a huge task every year they should be asked to have a department in each month's issue.

Allow me to say that I also feel this is another evidence of foresight in our State Society and Journal to keep the profession of Kentucky just a little ahead of the profession elsewhere.

R. L. Woodard, Hopkinsville, (past president): Congratulations are certainly due to somebody for the splendid achievements of the Woman's Auxiliary on their production of the December Journal.

I am not sure however to whom congratulations should be extended, whether to the women—God bless them,—who have certainly "Out Heroded Herod" in their accomplishments, or to the doctors of the state for having such able and efficient wives and daughters. If all the efforts of the Woman's Auxiliary to the State Society prove as successful as their first public endeavor the State Society had better look to its laurels.

V. A. Stilley, Benton, Councilor, First District: I am indeed proud of the Journal, proud that Kentucky was the first to extend this courtesy to her women, and proud of our women for the overwhelming success they have made as journalists, to say nothing of the great part they are to play in our program for better health.

As a member of the Council it was my pleasure to cast my vote of approval for the Woman's Number of our State Medical Journal. In my opinion no finer thing has come our way than the Auxiliary. That our mothers, wives and daughters can and will be of great value as an organized body to aid the profession has been most splendidly evidenced by the wholesome articles compiled in the December number and contributed by the women of our own and other states.

I am wishing for them a great ingathering of members and every success in their work.

D. M. Griffith, Owensboro, Councilor, Second District: The "Woman's Auxiliary Number" is added evidence of the constructive policy of

the Journal, and again makes manifest its progressive spirit. The splendid edition is honorable alike to the women as well as the profession. Such advance progress will keep the profession of Kentucky in the lead.

Virgil G. Kinnaird, Lancaster, Councilor, Seventh District: After reading the December issue of the Kentucky Medical Journal edited by the Woman's Auxiliary of the Kentucky Medical Association, I desire to express my hearty approval and appreciation of that splendid issue. The physicians of Kentucky congratulate the Auxiliary upon its aims and endeavors. It has become a genuine inspiration. Medical men have long felt a need for just such effective support in projects which concern community interests. I am sure that this splendid organization of women who are so closely allied in interests can fill a position of ever increasing importance as the intermediary between the doctor and the public.

I notice with especial interest that the President, Mrs. Stilley, urges that the Auxiliary undertake the gathering of historical data of the medical pioneers of Kentucky. This will be a great service to the State and posterity.

All good wishes for the growth and development of the Woman's Auxiliary of the Kentucky Medical Association.

W. E. Gardner, Louisville: Councilor, Fifth District and President Jefferson County Society: The Woman's Auxiliary Number of the Kentucky Medical Journal was certainly well done, and demonstrates the remarkable resourcefulness of this splendid organization which is a most valuable adjunct to the Kentucky State Medical Association.

I would advise, however, that inasmuch as one of the regular monthly issues of the Journal was used for the Woman's Auxiliary, last year, another such issue should be made a special number of the Journal and not take the place of one of the regular issues.

J. W. Conklin, Leitchfield: Please accept congratulations on the appearance and general make-up of the December issue of the Kentucky Medical Journal just received.

I had written Dr. McCormack only yesterday that I had not received the December number. The "Auxiliary" should have been in existence these many years.

Hope the ladies may edit a special issue of the Journal the coming year.

Pregnancy After Salpingectomy.—In the four cases of pregnancy following salpingectomy cited by Douglass, the resorted ovary was sutured into the cornu of the uterus, only unilateral implantation being employed.

NEWS ITEMS

MONTHLY MEETING OF HARLAN COUNTY
MEDICAL SOCIETY FOR 1927.

March 19th.

Dr. S. H. Rowland: "Infant Feeding and Care in Disease."

Discussion: W. R. Parks.

Dr. L. E. Payton: "Feeding and Care of the Healthy Infant."

Discussion: B. L. Pursifell.

April 16th.

Dr. E. M. Howard: "Surgical Restoration of the Perineum and Cervix."

Discussion: W. E. Riley and W. P. Cawood.

Dr. R. H. Bush: "Early Diagnosis of the Acute Abdomen."

Discussion: B. E. Giannini and H. K. Buttermore.

May 21st.

Dr. Owsley Grant, of Louisville: "Medical Treatment of the Physiologically Enlarged Prostate."

Dr. Walter S. Hume, of Louisville: "Local Anesthesia."

June 18th.

Dr. W. M. Martin: "Ethics."

Dr. C. B. Spicer: "Medical Jurisprudence."

Dr. L. H. Redman: "Diagnosis and Treatment of Cholecystitis."

Discussion: J. R. Howard.

July 16th.

Dr. P. O. Lewis: "Clinical Diagnosis and Treatment of Typhoid Fever."

Discussion: E. E. Akin.

Dr. Arthur Jenkins: "Differential Diagnosis and Treatment of Asthma and Hay Fever."

Discussion: Clark Bailey.

August 20th.

Dr. C. R. Petty: "Treatment of Acute Gonorrheal Urethritis."

Discussion: M. M. Riddell.

Dr. B. W. Whitfield: "Treatment of Chronic Gonorrheal Infection in the Genito Urinary Tract."

Discussion: J. S. Bobo.

September 17th.

Dr. M. L. Gunn: "Headaches and their Significance."

Discussion: J. W. Nolan.

Dr. J. W. Nolan: "Trachoma Diagnosis and Treatment."

Discussion: M. L. Gunn.

October 15th.

Dr. C. E. Abel: "Industrial Physical Examinations."

Discussion: J. C. Nash and A. G. Patterson, of Pineville, Ky.

Dr. M. H. Todd: "Relation of Industrial Hernias to the Workmen's Compensation Law".

November 19th.

Dr. James H. Jeffries: "Diagnosis, Treatment and Complications of Scarlet Fever."

Discussion: Paul Beauchamp.

Dr. W. K. Howard: "Diagnosis, Treatment and Complications of Diphtheria."

Discussion: C. C. Paynter.

Dr. R. L. McCormick: "Schick Test and its Applications."

December 17th.

Dr. H. Stuart Hodges: "Focal Infections and Their Sequelae."

Discussion: L. O. Smith, J. B. Jones and D. H. Smith

Dr. A. T. McCormack, of Louisville: Address.

BOOK REVIEW

THE NEW STEVENS' PRACTICE. Octavo of 1174 pages, illustrated. By A. A. Stevens, M. D., Professor of Applied Therapeutics, University of Pennsylvania. Second Edition, Reset. W. B. Saunders Company, Publishers. Cloth. \$7.50 net.

This book has been entirely reset, a very great deal of new material has been added, all old matter has been eliminated and every proved advance in the field of internal medicine has been included. Among the more important changes and additions are: Rewriting of the chapters on syphilis of the circulatory system, botulism, heliotherapy, diabetes mellitus, including insulin, alkalosis, spasm of the esophagus, chronic ulcerative colitis, multiple polyposis of the intestine, jaundice, bradycardia, paroxysmal tachycardia, arterial hypotension, primary purpura hemorrhagica, erythremia, hemorrhagic diseases of the newborn, trigeminal neuralgia and tumors of the cauda equina. The following subjects appear for the first time: Primary meningococcal bacteremia disseminated erythematous lupus, tularemia, epidemic jaundice in the United States, etiology of scarlet fever, Dick test for determining susceptibility to scarlet fever, coccidial granuloma, lipodystrophy, agranulocytic angina, uveoparotid fever, vasomotor rhinitis, occlusion of the coronary arteries, melanuria, Epstein's nephrosis, sickle cell anemia, Ayerza's disease, chronic sclerosing osteitis, acrolynia, and Horner's syndrome.

DEFECTIVE MEMORY, ABSENTMINDEDNESS AND THEIR TREATMENT. By Arnold Lorand, M. D., Carlsbad, Czecho-Slovakia. Author of "Old Age Deferred", Health Through Rationay Diet. F. A. Davis and Company, Publishers, Philadelphia. Price, \$3.00 net.

Not only a mere description of the different causes which produce bad memory are thoroughly and fully discussed but the latest and best method of treating the different conditions and ailments underlying the cause are given careful consideration.

INTERNATIONAL CLINICS. A Quarterly of Illustrated Clinical Lectures and Especially Prepared Original Articles on Treatment, Medicine, Surgery, Neurology, Paediatrics, Obstetrics, Gynaecology, Orthopedics, Pathology, Dermatology, Ophthalmology, Otolaryngology, Rhinology, Laryngology Hygiene, and other topics of interest to students and practitioners, by leading members of the medical profession throughout the world. Edited by Henry W. Cattell, A. M., M. D., Philadelphia, U. S. A., with the collaboration of Chas. H. Mayo, M. D., Rochester, Minnesota; Sir John Rose Bradford, M. D., London, England; Hugh S. Cummings, M. D., D. P. H., Washington, D. C.; William S. Thayer, M. D., Baltimore; John G. Clark, M. D., Philadelphia; Frank Billings, M. D., Chicago; James J. Walsh, M. D., New York; A. McPhedran, M. D., Toronto, Canada; John Foote, M. D., Washington, D. C.; Sir Humphrey Rolleston, Bt. K. C. B., M. D., D. C. L., Cambridge, England; Sir Donald Mac Alister of Tarbert, Bt. M. D., F. R. C. P., Glasgow, Scotland; Seale Harris, M. D., Birmingham, Alabama; Charles D. Lockwood, M. D., Pasadena, California; A. H. Gordon, M. D., Montreal, Canada; T. M. Devine, B. S., Melbourne, Australia; Fielding H. Garrison, M. D., Washington, D. C.; R. Bastianelli, M. D., Rome, Italy.

Volume III. Thirty-sixth series, 1926. Philadelphia and London, J. B. Lippincott Company.

ABT'S PEDIATRICS. By 150 specialists. Edited by Isaac A. Abt, M. D., Professor of Diseases of Children, Northwestern University Medical School, Chicago. Set complete in eight octavo volumes totaling 8000 pages with 1500 illustrations, and separate Index Volume free. Now ready—Volume viii containing 1102 pages with 388 illustrations and General Index to Volumes i to viii. Philadelphia and London: W. B. Saunders Company, 1926. Cloth, \$10.00 per volume. Sold by subscription.

Abt's "Pediatrics" is now complete—and with it goes free a separate Index Volume to the entire work. This index volume makes instantly available every item on any subject discussed in the entire eight volumes. It gives Abt's "Pediatrics" a permanent reference value that will make it a source of information and authority for many years to come.

Abt's "Pediatrics" is the first exhaustive work on this subject in 35 years. It consists of a great number of monographs written by 154 authorities. It covers not only the medical side of pediatrics but presents as well the specialized surgery of childhood.

The illustrations, totaling nearly 200 and of which many are in colors, further enhance the value of the work. They will be found a great help in diagnosis and in the application of treatment, whether that be a simple procedure or a complicated technic in pediatric surgery.

Abt's "Pediatrics" does more than bridge the

gap of 35 years—it embraces the entire subject from every angle.

GENERAL INDEX VOLUME OF THE COLLECTED PAPERS OF THE MAYO CLINIC AND THE MAYO FOUNDATION—1884 to 1925 inclusive. Octavo volume of 227 pages. Philadelphia and London: W. B. Saunders Company, 1926. Cloth \$5.00 net.

THE SURGICAL CLINICS OF NORTH AMERICA (Issued serially, one number every other month). Volume VI, Number III (Lahey Clinic Number—June 1926). 214 pages with 54 illustrations. Per Clinics year (February 1926 to December 1926). Paper, \$12.00; Cloth \$16.00 net. Philadelphia and London: W. B. Saunders Company.

DIATHERMY, WITH SPECIAL REFERENCE TO PNEUMONIA. By Harry Eaton Stewart, M. D., Attending Specialist in Physiotherapy, U. S. Marine Hospital, N. Y. Author of "Physiotherapy, Theory and Clinical Application"; "Physical Reconstruction and Orthopedics." Second Edition—Revised and Enlarged).

12 Mo. Cloth, 228 pages, 45 illustrations and 15 charts, \$3.00 net. Paul B. Hoeber, Inc. Publishers of The American Journal of Roentgenology and Radium Therapy; Annals of Medical History; Annals of Roentgenology, The American Journal of Surgery, etc. 67-69 East 59th St., New York City.

"A notable feature about this book is the modest and open-minded manner in which the data in favor of the value of diathermy in pneumonia are presented. The method is described in minute detail, and the contraindications and precautions . . . are set forth in clear language. It is definitely stated that with proper technique no harm can be done to the patient; as diathermy lowers the blood pressure it was at first thought that this might be a contraindication to its employment in pneumonia, but experience has shown that this objection does not hold good.

This new form of treatment, so frankly presented by the author, certainly deserves attention and further trial."

THE DOUDENAL TUBE, AND ITS POSSIBILITIES. By Max Einhorn, M. D., Professor of Medicine at the New York Postgraduate School, Visiting Physician to Lennox Hill Hospital, New York. Second Edition, Revised and Enlarged. Illustrated. F. A. Davis Company, Publishers, Philadelphia. Price 4/50.

The second edition has been thoroughly revised, and enlarged. The newer investigations with, and the further elaborations of the duodenal tube have been duly incorporated in this volume.

Kentucky Medical Journal

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COUNTY SOCIETY REPORTS

Russell: 38th Annual Meeting of this County Medical Society met at Holt Hotel, Jamestown, at 9:30 A. M.

W. G. D. Flanagan, Vice-President, called the meeting to order; L. D. Hammond, President, not being present on account of illness, after the usual business was transacted the following were elected officers for 1927:

L. D. Hammond (Re-elected) President
W. G. D. Flanagan Vice-President
J. B. Scholl Secretary & Treasurer
A. V. Neathery, Censor—3 yrs; time expiring December, 1929.

J. B. Tartar, Delegate for 2 years.

J. S. Rowe, Alternate for 2 years.

Those present paid dues for 1927.

Talks and jokes were made by all present. All seemed to enjoy the 39th annual session and promised to make 1927 the hardest working year for Preventive Medicine and to aid in having frequent Public Health Community Meetings in different parts of Russell County during the next year. We extend our heart-felt thanks for their presence and able assistance of Drs. R. C. McChord, Lebanon, Heistand, Atkinson and Elrod, Campbellsville, Dr. J. G. Carpenter, Stanford, Woodruff Flowers, Columbia; Granville S. Hanes, E. F. Horine, Frank Perkey, Jethra Hancock, T. L. Higginbotham, Louisville; Elvin Harris, Dentist; Virgil Kinnaird, Lancaster; A. W. Cain, J. A. Rolin, W. R. Cundiff, Somerset; and A. A. Hatfield, Danville.

We wish them a happy New Year and a long prosperous life and to come over and help us in our work through next year. Of course I feel sad when I think I am the only living member who was present 38 years ago when the Russell County Medical Society was organized but thank the God of Abraham, Isaac and Jacob for sparing me through these long years that I have been present at all meetings while I felt about the size of a three cent piece I set back in one corner with my arms akimbo and lip hanging down like a motherless colt; ears open, while those able men were talking I almost jumped up and hallowed Hallalujah.

J. B. SCHOLL, Secretary.

Lyon: At a meeting of the Lyon County Medical Society the following officers were elected:

C. H. Linn, Kuttawa, President; Y. L. Phillips, Kuttawa, Vice-President; W. G. Kinsolving, Ed-dyville, Secretary and Treasurer.

We will select the delegate and alternate to the State Society some time in the future.

W. G. KINSOLVING, Secretary.



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New—Wood and Rowell's **Health Supervision of Schools**

This book presents a thoroughly practical and comprehensive program of health supervision in schools. It considers the protection and promotion of the health of school children, teachers, and all employees of a school system; the detection and correction of health defects of pupils, and methods of minimizing the limitations of handicapped children.

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Methods of examination are discussed; various standards and responsibilities of schools and school authorities are linked with the provisions for the correction of ill health and defects.

By THOMAS D. WOOD, M.D., College Physician. Adviser in Health Education and Professor of Health Education, Teachers College, Columbia University; and HUGH GRANT ROWELL, M.D., Physician to the Horace Mann Schools, Assistant Professor of Health Education, Teachers College, Columbia University. Octavo of 637 pages, illustrated. Cloth, \$7.50 net

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How high protein feedings with carbohydrate additions can be used to correct fermentative (summer) diarrhoea

FERMENTATIVE (summer) diarrhoea in infants is now recognized in the majority of cases as being due to excessive fermentation of carbohydrates. The stools are usually distinguished as being greenish in color, acid in odor, irritating to the skin, and with or without mucous.

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A rational way to combat the excess activity of acid-forming bacteria is temporarily to reduce the carbohydrate and increase the amount of protein in the feeding. This may be done by adding Casec to diluted cow's milk. The administration of this mixture usually produces less frequent stools and of a paste-like consistency within one or two days.

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KENTUCKY MEDICAL JOURNAL

BEING THE JOURNAL OF THE KENTUCKY STATE MEDICAL ASSOCIATION

Published Under the Auspices of the Council

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EDITORIAL

THE GREAT FLOOD.

The greatest flood in the history of the Mississippi Valley will have become historical when this is read. It is a privilege to preserve in these pages a tribute to the effective work done by the All-Time Health Department of Fulton County and the medical profession, all in conjunction with the American Red Cross, at Hickman. More than four thousand refugees were rushed into this camp taken from the flooded areas in Missouri. The County Health Officer, Dr. James C. Morrison, made immediate contact with the Disaster Director of the Red Cross, Mr. Kilpatrick. The two nurses in the All-Time Health Department were reenforced by Miss East, the Director of the Bureau of Public Health Nursing, and two County Health Nurses at Mayfield. Miss Spoeneman, one of the nurses of the Bureau of Child Health of the State Board of Health, took charge of the babies and kiddies in camp. All necessary health precautions were taken from the outset with the result that there was a minimum of sickness. An emergency hospital was established and maintained by the medical profession of Hickman. Mr. Jacobson, the Sanitary Engineer from the State Board of Health, took charge of the water supply and sewer disposal. The food supply was abundant and excellent. No county in the United States has ever more creditably done its bit in a major disaster than Hickman, Kentucky, during the 1927 flood. This was due to the fact that it was organized for effective work during ordinary times and could quickly mobilize the necessary force during this major emergency.

HONOR TO McDOWELL AND CLAY.

A distinguished philanthropic citizen of Louisville, Mr. I. W. Bernheim, has made it possible for Kentucky to be represented in the Hall of Fame in the Capitol at Washington by statues of two of its most distinguished citizens. The General Assembly created a commission consisting of President McVey of the University of Kentucky, President Colvin of the University of Louisville and President Hutchins of Berea College. They have taken

the time to carefully consider the matter, and after corresponding with representative people not only in Kentucky but also distinguished Kentuckians who live elsewhere, they have selected Ephraim McDowell and Henry Clay.

The Journal congratulates the State and the Commission upon these wise selections. Those familiar with the history of Kentucky and of mankind recognize in the "Father of Ovariectomy" and the "Great Compromiser" the two of our citizens who have contributed the most to human welfare. It is good for the nation that the story of these two great lives shall be kept before it.

POLLUTION OF WATERWAYS.

Permitting a menacing condition to prevail such as the pollution of rivers and streams is indeed a subject for criticism.

The most preposterous method of disposal of sewage and garbage in the rivers and streams, threatens the health of all centers situated upon waterways.

Scientists oftentimes warn of the day when population will have so increased there will be overcrowding of such proportions as to make impossible the growing of sufficient food to feed the people, but rather would we consider man his own worst enemy in not adopting proper means of disposing of his own filth. When one stops to think of it—how asinine is it that man should run his own offal into formerly pure streams, pollute them and then be compelled to erect expensive filtration plants to remove the filth which he willfully and knowingly put into the streams. And if the present system is continued, the year is not so far distant when pollution will be so terrible it will be impossible to purify inland waters by means of chemical filtration and render the same fit for human consumption.

Yet the filth we waste, by turning it into our harbors and streams and then paying millions to reclaim the waters so deliberately polluted, would be worth millions upon millions if converted into compounds with which to aid Mother Nature in producing crops from impoverished lands.

The scheme of the world runs in cycles, of which life and death are but incidents. That which today is lowly refuse might to-

morrow be transformed into one of the most useful or most beautiful articles known to man. But to live, let live and make the most of the opportunities afforded, the laws of Nature cannot be violated. Streams must be kept pure, lands enriched and proper uses made by man of electrons, protons and all the atomic forces which compose and decompose all matter.

T. M. Dorsey.

A FINE TRIBUTE.

One of the finest characters in the medical profession of Kentucky is Doctor Benjamin F. Van Meter of Lexington. Doctor Van Meter is almost too young to be called a veteran and yet his attainments and distinction rank him as one of the leaders of the profession and he is a veteran of the World War.

Early in the year he became very ill and was sent to the Veterans Hospital at Oteen, North Carolina. His stay in the hospital gave his associates in the Fayette County Medical Society an opportunity to pay him one of the most beautiful tributes that has ever come to our attention. Every member of the Society wrote him an affectionate letter of friendly greeting.

BUREAU OF DENTAL HEALTH.

The State Board of Health of Kentucky, through its newly created Bureau of Dental Health is announcing the beginning of a campaign for Preventive Dentistry.

In seeking good health physicians are especially interested in this development because Preventive Dentistry controls many phases of the general subject. The skill of mechanical dentistry can be taught to any good mechanic, but the science upon which the art is based is a much broader field. As dentists and doctors learn that their work helps to keep perfect the highest form of life, the human race, they will become more and more interested in Preventive Dentistry amongst the other fields of preventive medicine.

The Director of the new Bureau well says, "Real dentistry stands for more than dollars, and when we do good for others we really do best for ourselves, mentally and spiritually. We as a profession, must find a real solution for Dental Health."

ATTENTION DISABLED VETERANS OF THE WORLD WAR.

The following is printed for the information of the Medical profession, since doctors are more frequently asked for information and advice than any others.

All veterans of the World War who were wounded, gassed, injured or disabled in line of duty while in the military or naval service between the dates of April 6, 1917 and July 2, 1921 and who received honorable discharges whether over-seas or not, who desire valuable assistance in securing compensation or increase in what they are now receiving, can now do so through the State Headquarters of the Disabled Veterans of the World War at Lexington, Kentucky.

A number of disabled veterans of the state, among the number being Sergeant Willie Sandlin, Kentucky's only native born Medal of Honor Veteran of the World War, who single handed killed twenty-four of the enemy in one day, have since the first of the year organized the Disabled Veterans of the State into a strong body and expect to assist every veteran that asks for help.

On Friday and Saturday, June 10th and 11th, a State Convention will be held in Lexington to which all disabled veterans in Kentucky are invited. Several wealthy friends of the veterans have guaranteed the funds to entertain the crowd.

Every disabled veteran of the World War should at once write State Headquarters of Disabled Veterans, Lexington, Kentucky giving names, addresses and state kind of assistance needed, which will be furnished absolutely free.

Transverse Presentations.—If the bag of waters is ruptured, version should not be unduly delayed with the idea of following this maneuver immediately by extraction; the danger of impaction or of rupture of the uterus is too great. Nor does Kammiker approve of forced extraction after version unless the fetal heart tones remain bad. In placenta previa, immediate extraction is absolutely contraindicated. In a material of 130 transverse presentations, transperitoneal cesarean section was performed eight times; the cause of the false presentation in these cases was contracted pelvis. All the mothers thus operated on lived, and all the children were delivered alive; one died three days later from pneumonia. Spontaneous version took place in four cases, spontaneous evolution in three, **partus con duplico corpore** in two. The children in the last named deliveries were premature and abnormally small; one was born alive but died within an hour. If impaction has taken place, embryotomy is the quickest and safest procedure.

ORIGINAL ARTICLES

THE PRESENT STATUS OF GALL BLADDER SURGERY.*

By L. WALLACE FRANK, Louisville.

In any consideration of the disease of the gall bladder one must realize that pathology may exist for years giving such slight evidence of disease that serious trouble here is often unsuspected. Quite commonly do we note associated with chronic gall bladder disease other pathological changes such as cardiac degeneration, changes in the pancreas, liver (1) etc. Of the symptoms of marked gall bladder infection all are aware. A typical case either of gall bladder colic or acute cholecystitis is easy of diagnosis and such cases are immediately recognized as surgical and the proper treatment instituted early.

The symptoms of the greater group, i. e., the low grade infections of the gall bladder, are not so marked. In this group fall a large number of the chronic dyspeptics whose symptoms are gas and fullness after meals, eructations, at times a little fever, hyper or hypo-acidity and constipation. These individuals frequently have pain in the epigastrium and at times a slight degree of jaundice. Diseases other than gall bladder infection may produce like symptoms and it is most important that we make a correct diagnosis.

Until recently this was a most difficult differentiation to make and it depended wholly upon an accurate analysis of an intelligently given history. It is true there have been one or two laboratory tests which have aided us in our study of this type of case, one, the Von der Burg test of the estimation of blood bilirubin (normal being .6 mgms. per 100 ccm. of blood). According to Lahey (2) blood bilirubin of more than .7 mgms. per 100 em. of blood is of diagnostic value. Likewise an icterus index of 12 to 14 definitely indicates biliary pathology.

The x-ray is of diagnostic value in positive cases, i. e., those in which shadows of stones are present. It is the opinion of a number of observers that a normal gall bladder does not cast a shadow and consequently those showing on the x-ray plate are considered pathological. Additional evidence of gall bladder disease is demonstrated in the roentgenological examination of the gastro-intestinal tract such as peripyloric adhesions, deformity of the duodenal bulb due to an enlarged bladder, or adhesions of the hepatic flexure of the colon. Such indirect indications of gall bladder disease must be considered along with

the history of the case, the physical findings and laboratory studies. Such roentgenological findings are not positive but corroborative only.

In February 1924 Graham, Cole and Copher (3) made a preliminary report of x-ray studies of the gall bladder after the intravenous administration of a dye substance, tetrabromphenolphthalein. They found that this drug was eliminated by the liver, collected in the gall bladder and was there in sufficient concentration to cast a shadow upon the x-ray plate. Since their epoch making discovery numerous observers have worked along this line and we now have accumulated a mass of literature bearing upon the subject. The toxic action of the drug which was noted in a sufficiently large number of early cases to make a serious objection to this method of investigation has been largely eliminated. Furthermore it has been demonstrated that this substance can be given orally and although the results are not so good as when given by the intravenous route there is sufficient absorption of the drug to cast clear gall bladder shadows. By a careful study of roentgenograms taken at intervals after the administration of Sodium Tetraiodophenolphthalein, the preparation now in general use, one can obtain a fairly accurate knowledge of the condition of the gall bladder. Such a study may impart not only an idea of its gross pathology but also shows impairment of function.

The dye appears in the gall bladder within a certain time after administration, concentrates there and later disappears. Stewart (4) concludes that when no shadow of the gall bladder appears there is either obstruction of the cystic duct by stone, angulation, adhesions or swelling of the mucosa; that on account of thick mucus or inspissated bile the dye cannot mix with it; that on account of the thick wall of the gall bladder or contracted cavity enough of the dye could not get into the gall bladder to form a shadow; that on account of a hydrops the dye is too dilute to cast a shadow; that on account of liver disease or poor excretion the dye is not eliminated or if so not until late and the shadow then appears late after the administration.

Graham and his co-workers (5) are of the opinion that when no shadow appears there is either one of two things, serious gall bladder pathology or a badly damaged liver and in more than 90 percent of instances the former is true. Carman (6) states that abnormal responses show as failure of the gall bladder to fill with the dye, scanty filling as shown by persistent faintness of the shadow, partial filling and deformity of contour, and mottling of central defects.

*Read before the Kentucky State Medical Association, Frankfort, September 21, 22, 23, 1926.

The results of the study of the gall bladder by cholecystography has been most illuminating. It was formerly our belief that many gall bladders were removed in which the gross pathology was not sufficient to warrant such a procedure. By using this new method of investigation we have found gall bladders in which there was no concentration of the drug and operation revealed very little gross pathology. Several such gall bladders, however, when opened have contained small calculi of such size that they were not palpable.

Failure of concentration of the dye means, in the absence of liver disease, loss of the power of the gall bladder to absorb water. Such loss can be due either to a diseased mucosa or to pathological changes in the deeper walls of the gall bladder interfering with absorption within the organ. In clear cut cases of chronic cholecystitis there has been frequently noted a mottling of the liver at the site of the cholecyst which appears as a white striation. Such marking is thought to be due to blocking of the lymphatics and is the result of inflammatory changes in the lymphatic connection between liver and gall bladder due to a chronic cholecystitis.

To our mind the great objection to indiscriminate cholecystectomy has been the sacrifice of an organ which has a definite function. The function of the gall bladder is twofold, concentration of bile during periods when it is not needed for digestion and secondly to regulate the pressure in the common duct. A gall bladder which cannot concentrate bile is no longer a functioning organ and in the presence of symptoms of gall bladder disease and the findings of positive evidence of gall bladder pathology by the Graham method we believe such should be removed.

As we previously stated there may occur changes in other organs secondary to a low grade infection of the cholecyst. It was stated years ago that "The only good Indians were dead Indians," and so it is with gall stones. The only gall stones that are of no significance are the removed ones. There are no silent gall stones. Whether stones are the result of gall bladder infection or the causative factor is of little consequence. The chief consideration is that we here have a condition which may be followed by serious consequences and it should be eradicated.

Operative treatment of gall bladder disease must of necessity vary with the pathology found and the condition of the patient. No hard and fast rule can be followed but cholecystectomy should be done when possible. In the presence of marked pancreatic involvement the advisability of removing the gall bladder may be questioned. In such a

case if the organ is removed drainage of the common duct should be done. It is our custom in this type to be satisfied with drainage through the gall bladder, and this drainage should be continued for several months. On account of the recurrence of stones we have had occasion to reoperate two such cases in both of which at the first operation the head of the pancreas was enlarged, hard and nodular. There were but few adhesions and the pancreas had returned to normal. At times it is most difficult to make a positive diagnosis of the pancreatic lesion. Should it prove cancerous and the gall bladder has not been removed a short circuiting operation as cholecyst-gastrostomy or cholecyst-duodenostomy can be done.

Of the technique of cholecystectomy little need be said. There is only one step in this procedure that we would like to emphasize, i. e., the isolation of the cystic duct in some cases. When there are many adhesions about the ducts we think it wise to dissect out the cystic and common ducts in order to prevent injury to the latter either by clamp or section. In some individuals the cystic and common bile ducts lie parallel and in the removal of the gall bladder common duct injury can easily occur. The repair of such injuries is a most difficult task and prevention by care at the time of operation is the best measure.

In 1868 John Slough Babbs performed the first cholecystostomy and this operation was later popularized by Marion Simms in 1878 and still later by Halstead of Johns Hopkins. It became the surgical treatment of choice in gall bladder affections. Its use was widespread and it continued in popularity long after the introduction of cholecystectomy by Langenbuch in 1882. Cholecystostomy was done in all except the more severely diseased gall bladders, in the latter cholecystectomy was done and its mortality was exceedingly great. Now with our wider experience and improved technique we have reversed the old method of handling these cases and cholecystectomy is the almost universal treatment. In the very acute infections, in the gangrenous gall bladders and in patients whose resistance is low cholecystostomy is done. At the present time the mortality for cholecystostomy is greater than for cholecystectomy due chiefly to the fact that the former operation is done only in the more serious cases.

In the acute gangrenous gall bladders it is our custom to establish drainage and later remove the organ should symptoms recur or a sinus develop. The latter is not an uncommon sequence due to sloughing of the mucosa at the cystic duct and stricture forma-

tion, or occasionally an overlooked or newly formed stone.

Much has been written of the treatment of the deeply jaundiced patient. In these cases careful studies not only of the clotting time but also of the bleeding time must be made. We prefer that both be within normal limits and in those where either is prolonged calcium lactate is given orally or calcium chloride by the intravenous route. We also use one of the commercial preparations which we think has proven of value in shortening the clotting and bleeding time. Transfusion of whole blood is of great value in the pre-operative preparation of this type of case. Furthermore the introduction of large quantities of fluid before undertaking any surgical procedure is of benefit. With proper pre-operative care and the careful estimation of the functional capacity of the kidneys operation may be done with a relatively degree of safety.

REFERENCES:

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DISCUSSIONS.

Irrin Abell, Louisville: Dr. Frank has given us an extremely interesting and, to my mind, a very fair and accurate presentation of surgery of the gall-bladder at the present time.

I find myself in perfect harmony with his statements and his conclusions and can only hope to emphasize some of the points which he has made.

First in regard to cholecystography, I quite heartily agree with him that in the vast majority of cases an accurate diagnosis can be made by a correct evaluation of the patient's symptoms and history. In our experience cholecystography has been of value largely in the border line cases. We have used it in perhaps 150 cases, and our conclusions have tallied largely with his own. In the patients presenting a definite history of gall-bladder disease, cholecystography is interesting only from an academic standpoint, yet in the individual with more or less mild digestive disturbance, in whom one is unable to demonstrate disease of the pylorus, of the stomach, of the duodenum, one hesitates to advise an abdominal operation, unless he feels satisfied that there is sufficient pathology to justify it.

It is just in this type of cases that we have found cholecystography most satisfying. We have used tetraidophthalein almost exclusively given by mouth, and this in about eighty to eighty-five per cent of the cases is very satisfactory, and in ten to fifteen per cent of cases the result is indeterminate.

I notice that recently Dr. Graham and his

co-workers have almost all gone back to the intravenous administration of the drug, just to eliminate this ten to fifteen per cent of cases in which an indeterminate result has been obtained.

It is particularly gratifying to have the laboratory confirmation of one's diagnosis in these border line cases. I can recall in my own experience having operated upon ten gall-bladders containing either adenomata or papillomata, in only one of which could the tumor be palpated with the gall-bladder exposed, and only in very few of which could the tumor be palpated with the gall-bladder open.

We have been accustomed to rely upon enlargement of the glands along the cystic duct in conjunction with a history of persistent disturbance of digestion as indicating a chronic cholecystic inflammation.

If we can have cholecystography in these cases before operation, I am sure it is a very much easier matter and one perhaps productive of more satisfying results to know at the time that we are actually dealing with pathology which might not be recognizable to the naked eye.

In regards to malignancy, I think it is true that at least ninety-eight per cent of the cases of carcinoma of the gall bladder are engrafted on rather long continued disease in the gall-bladder, in the vast majority of which stones are present. This certainly is an indication that if we are to take part in the prevention of carcinoma, we should urge such patients to subject themselves to operation before the advent of such a pathological change, because we know from experience that practically the only cases of carcinoma of the gall-bladder that we ever cure are those that we remove on indication of chronic cholecystitis and in which the malignancy is revealed subsequently upon microscopic examination. Any carcinomatous disease in the gall-bladder that can be recognized before operation, or even at the time of operation by ocular examination is practically beyond the possibility of cure.

Finally, I would like to emphasize one other thing to which Dr. Frank has called attention. In years gone by we have been accustomed to think of gall-bladder disease as a disease limited to this one organ. At present we realize that gall-bladder disease is frequently but a part of a system of disease; if you will think of the liver and its ducts, of the gall-bladder, of the pancreas, and of the duodenum as comprising one distinct system you have a better idea of the disease in that system rather than attempting to visualize disease in the gall-bladder as limited to the gall-bladder alone.

In twelve cases of acute hemorrhagic pancreatitis that have come under my observation, stones were present in the gall-bladder in eleven

and in the twelfth unquestioned microscopic gall-bladder disease was present.

In a consecutive series of over 500 operations on chronic cholecystitis in which the condition of the pancreas was noted at the time of operation, over fifty per cent showed demonstrable change in size, contour or density of the pancreas itself. In a very small series of cases undertaken since the first of May of this year in which chronic cholecystitis we have repeatedly removed a small section of the liver for microscopical examination, we have yet to receive from the laboratory a single report of normal liver tissue. They have shown invariably intralobular hepatitis with or without fatty degeneration. If you can demonstrate this living pathology to that coincident and concomitant disease in the biliary system as well as distant disease in the shape of a myocarditis or nephritis, how important the deduction or the conclusion that patients presenting continued evidence of digestive disturbance should receive early attention when possibly the pathological ideal might be carried out. The pathological ideal, of course, is to remove all of the pathology, and theoretically cholecystectomy accomplishes this, provided, of course, that the disease is limited entirely to the gall-bladder. It is only when you recognize the cases early that this will be possible. Later in the course of the disease as indicated this is often impossible. In acute infections with extension of disease beyond the gall-bladder, the pathological ideal must be subordinated to the greater ideal of saving life.

M. Casper, Louisville: One of the points I want to mention is the gall-bladder without stones and adhesions. I have had a few cases where I broke up the adhesions, and left the gall-bladder. This I think is decidedly a mistake. I think that it is the very gall-bladder that should be removed. Once or twice in a similar case we have tried remedying it in the earlier period. That didn't work out well either. Lately we always remove the gall-bladder with adhesions.

Another point is that often you can get advantage of drainage by removing the gall-bladder by applying the tube through the cystic duct. This gets rid of a lot of infection in the ducts.

The most important point I wish to make is the following up of these gall-bladder cases. The tendency is, after we remove the gall-bladder and the patient gets out of the hospital, to forget about it. This patient is far from well, as a rule, and if the patient goes on in the same habits and the same ways of life as she did before (I will say she because three-fourths of gall-bladder surgery is in women), she is certainly going to have trouble either in the pancreas or in the common duct or in the liver.

Dr. Abell said that very often concomitant

and the inflammatory trouble is in the liver already.

I had a case recently in which I opened up the common duct three times after removing the gall-bladder several years before. I am satisfied that these stones were not overlooked because we found the common duct literally jammed with stones on each operation, the second and third time. The last time they reformed within about a year. They were very soft concretions. The duct had gotten as big as the thumb, and it was literally jammed with this sandy concretion.

This patient was a large woman weighing about 300 pounds and would not listen to dietary or any other regulations and of course suffered constantly. I think if we work along with the internist in these cases and have the patient report to the internist and follow out the dietary and sanitary instructions, our results will be considerably better.

B. F. Zimmerman, Louisville: I want to express my appreciation of Dr. Frank's excellent paper. There are just a few of the statements that I want to speak of for a moment. One is that in the acute cases that are gangrenous we should not attempt radical operation. I grant you that we may succeed and we may have a majority of the cases going on all right, but occasionally one of them is going to prove fatal, and then we are convinced that if we had been a little more conservative and had drained that gall-bladder, with or without the removal of the stones, and waited until the infection had subsided and then attempted our radical operation, we would have had better results.

The changes in the pancreas, gross changes such as Dr. Abell mentioned, are in accord with our observation. In the last eight months it has been our privilege to see two cases of acute pancreatitis. I had only seen three before in my experience.

Each of these had stones in the gall-bladder and one of them had a stone removed from the common duct.

In all cases of gall-stones where the stones are small and numerous, as Dr. Frank showed in one of these pictures here, I think he is exactly right in saying that that gall-bladder should be removed. Even though he is satisfied that every stone can be extracted from the gall-bladder and the ducts, it is questionable whether that will prevent the formation of stones of similar size and nature after drainage has ceased.

In other words, the gall-bladder so far as forming stones is concerned is in a very prolific stage. We feel that all such gall-bladders should be removed, and especially is that true in the young individual. In an old patient with one or two stones of large size and no evidence of any recent formation, I feel that often we are doing best by the patient in simply removing these

large stones which have been formed probably years before, and there is no evidence of any further formation, and draining that gall-bladder, because it is a simpler thing and one that the older patient will probably stand better than a cholecystectomy.

L. Wallace Frank, Louisville, (in closing): As we stated in our paper and as was emphasized by Dr. Abell, it is in the indefinite case, the borderline case, that cholecystography has its greatest value. In the clear cut, definite case such study is not necessary to make a diagnosis. In the borderline case one hesitates to advise laparotomy when uncertainty exists as to whether or not a surgical condition will be found. However should we have in addition to the usual vague symptoms the confirmatory evidence of a positive x-ray diagnosis there is no question but that surgery is warranted. In the past no doubt many gall bladders have been removed with the diagnosis of chronic cholecystitis and the patient not benefitted by the operation. With the present day method of investigation this should no longer obtain and we feel sure that by this newer method of study we can eliminate those "come backs" which are in a way a reflection upon all us who are doing surgery. If without this x-ray study operation is done for cholecystitis and no indications of biliary pathology, such as adhesions, enlarged glands along the ducts, etc., found we believe cholecystostomy is contra-indicated. Remove what pathology is found, be it appendix or elsewhere and be content to let the gall bladder alone. Then surely we have not made the patient any worse which adhesions resulting from an ill advised cholecystostomy might do.

As to the best method of giving the dye there can be no question but that the intravenous route is preferable. Reactions still occur but when the drug is introduced into the vein the possibility of failure of absorption is eliminated. For the examination of the ambulatory patient the oral method of administration is the easier. However before pictures of the gall bladder are made examination of the lower bowel should be done to determine the presence of unabsorbed dye substance and so eliminate a possible error in the interpretation of the roentgen findings.

Of a number of individuals who have had their gall bladders removed a few may have recurrence of symptoms and suffer similar to the way they did previous to operation, namely, with upper abdominal distress. In this type of case it is thought that the Sphincter of Oddi is spastic, that there is a dilatation of the common duct, and due to the distention of the common duct on account of the spasm of this sphincter, the patient still has epigastric distress. In such cases we believe that duodenal drainage by the Lyons-Meltzer method is of great benefit.

Dr. Zimmerman has stated* that gall stones

may occur in young persons and we wish to emphasize this point. It is the common teaching that cholecystic calculi and chronic cholecystitis is a disease of middle life. Certainly one does not forget the saying: "Fair, fat and forty, etc." We have seen several cases of gall stone disease in individuals under twenty and there are instances reported where stones have been found in fifteen year old patients.

In elderly persons the treatment of gall bladder calculi, be they large or small, varies considerably depending upon the general condition of the patient. In the aged we believe that it is the best plan to do just enough to give relief and not to attempt ideal surgery. Such patients usually have associated kidney and cardiac lesions and the quicker the operation and the less the trauma the better the result.

In differentiating renal and biliary calculi cholecystography may be of value. However, one must bear in mind that the shadow of a kidney stone and that of the gall bladder may overlie one another. We believe that the introduction of the leaded catheter and the taking of radiograms in two positions gives a more accurate means of differentiation.

REVIEW OF THE PRESENT STATUS OF SERA AND VACCINES.*

By R. E. SMITH, M. D., Henderson.

The committee on scientific work requested that I "Review the Present Status on Sera and Vaccines." It is needless to say that the time allotted for the discussion is insufficient to do justice to the subject. Taking either of these two subjects sera or vaccines, we would more than consume the time allotted.

In reviewing the present status of sera and vaccines, if we look back to the time when bacteriology did not exist, we will find some remarkable examples of clear thinking and what might be considered as prophetic utterances regarding the future knowledge of micro-organic life.

If we go back to the Greek philosophers, we are struck with the accuracy with which they describe micro-organic life. By careful observation of fermentation, they came to the conclusion there must be something, although far out of the reach of the human eye, that lived and multiplied. We know that the gods were accused in many instances as being the direct cause of disease and plagues which devastated cities and nations; although dogmas of the Church in many instances held back science for centuries, still the honest thinker was not satisfied with the explanation given him by oracles or sooth-sayers, nor was he checked from his investigations by edicts is-

*Read before the Kentucky State Medical Association, Frankfort, September 21, 22, 23, 1926.

sued by religious counsels.

The knowledge that we have today on sera and vaccines was dearly paid for, nor were these the only difficulties that the brilliant minds and the indomitable courage of men like Anthony Van Leeuwenhoek the Dutch naturalist, who first discovered the "minute living worms" which were described to the Royal Society in London in 1683, and Marcus Antonius Plenciz of Vienna, who proposed a germ theory of disease in 1762, and taught the etiological relationship of Leeuwenhoek's "animalcules" to various diseases and also insisted in the relationship of this micro-organic life to processes of decomposition. Edward Jenner on May 14, 1796 performed his first vaccination against small pox.

Then O. F. Muller, a distinguished Dutch zoologist, studied "forms" and "structures" of bacteria; he was the first to use the term "bacillus," "spirillum" and "vibrio," with which we are so well acquainted. He was the first to attempt the classification of bacteria. He made the following observations with which all bacteriologists since his day agree, namely: "The difficulties that beset the investigation of these microscopic animals are complex. The sure and definite determination (of species) requires so much time, so much acumen of eye and judgment, so much perseverance and practice that there is hardly anything so difficult."

If we will stop and consider the various stages in the development of this science, I think that we will all agree that it is based on some of the most fundamental principles that we find underlying the great laws that govern the animal kingdom in nature. It has not been a hap-hazard collection of facts that have been thrown together from generation to generation, but is the accumulation of definite scientific data. It has been scientific research in the truest sense that has given us the knowledge that we possess on this subject.

We find Ehrlich in 1836 published his great work on infusoria; he differentiated them from Protozoa. Then Ferdinand Cohn of Breslau, greatly advanced our knowledge of bacteria. A new era began in the history of bacteriology with the work of Louis Pasteur, in his studies in fermentation, decay and putrefaction, and later in the relation of these organisms to disease processes in man and animals. He took a step further, he began the study of the scientific method of preventing and curing these diseases. He introduced experimental methods, used it with telling effect in the study of bacteriology and the allied micro-organisms. He may well be called the founder of bacteriology, but it remained to Robert Koch in his epoch-making

discovery to place bacteriology in the position of an independent science.

It is at this time that we find the oil immersion lens and the abbe condenser making their appearance. He also developed and used anilin dyes. Following these great pathfinders, the discoveries in bacteriology have been rapid and almost continuous. For instance, the etiology of relapsing fevers, of malarial fever, typhoid fever, bubonic plague, scarlet fever and others which it is not necessary to mention, and who among us will dare to state that tomorrow someone who has been working patiently, faithfully and with indomitable determination, will not discover the etiology or the treatment of some disease which has helped to add to the suffering of humanity.

We should not for one moment forget the difficulties that have beset every step of the way to these discoveries, the unjust and bitter criticism, the scoffing and ridicule that these discoveries have brought forth. Frascator (1546) spoke of contagion. Van Leeuwenhoek (1675) saw bacteria and in (1871) Recklinghausen detected them in wounds, and Cohn thought that a single micro-organism was responsible for all infection and as we have mentioned before we had to wait for Pasteur and Koch to demonstrate the specific etiology of disease. It is needless to go into the various types of local and general infections and their etiological factors.

Approximately half of all the diseases with which we are acquainted and it has been estimated that one half of the actual deaths are due to infectious diseases. This group of diseases are known or assumed on reasonable grounds to be due to infection by some external animate agent. This being the case there can be little question then as to the relative importance of our considering the present status of sera and vaccines. Frederick P. Gay discussing the subject has made the following statement:

"The importance of the infectious diseases become even more manifest when we consider that it is in this group of diseases that we possess the most satisfactory, complete and sequential group of facts. These facts not only have the advantage of completeness which renders their logical presentation possible, but have led in a number of instances to practical results of the greatest importance in diagnosis, prevention and cure of diseases."

It is unpleasant to say the least to have destructive criticism hurled against any scientific work which has been undertaken and achieved, by ideals of service to humanity and frequently with great sacrifice.

Truly doubtful skepticism should exist, but at the same time it is very difficult to explain

the skepticism and unbelief that exists in the minds of some of our own profession and we are forced to believe that the only explanation that may be given is inexcusable ignorance on the part of the skeptic. The medical profession should always have in mind Pasteur's maxim: "Never believe anything scientifically until you have to."

The knowledge that exists today on serum and vaccine medication is considered to be largely empirical or only for the specialist to understand how "it works" and the average physician has just to follow the "rules of thumb," give the dose as directed and then see if it works. Meanwhile the individuality of the physician atrophies little by little, as he allows his mental processes to follow in the line of least resistance. There must be an intelligent use of these therapeutic agencies so that they may be correctly used and applied, and with this knowledge at our disposal, our efforts will be crowned with increasing success year by year.

The discoveries of the last few years on this subject has made a separate science which we call "immunology." In a paper of this character it will be impossible for us to consider it in detail, but we will try and present as briefly as possible the importance of this subject.

I do not mean that we are to forget to be conservative but we should be careful not to call narrow-mindedness and egotism "conservatism." Could it be possible that Koch's postulates have led some of us to doubt the etiology of some diseases? Because we could not make every condition conform in every detail to the four postulates. Koch's Postulates:

1. The organism should invariably be present in the disease processes at some stage; failure to find it must be explained.
2. The organism should be isolated from the disease processes in pure culture, and then identified.
3. The organism in pure culture when injected into a healthy animal, should induce the characteristic reaction of the disease.
4. The organism should finally be recovered in pure culture.

I have often wondered why someone has not dared to modify the postulates and state that the experiments are to be performed on animals of the same genera and species.

Our advance in knowledge has slightly modified the original postulates. Another factor that has led to skepticism in serum and vaccine treatment is the fact that some of our research workers have gone into print at times a little too hastily and again we have not taken into consideration the fact that

some of the articles that we may have read definitely stated they were a "preliminary report."

This unfortunate rivalry that exists and the necessity of the individual to appear first in print to be able to receive the distinction and honor of being the "discoverer" has contributed, I fear, to the haste of entering into print. The great mass of pseudo medical literature which daily flood our mails and the pseudo ethical method of advertising "only to the physician" brings in this way an endless number of "treatments" and "cures" to the attention of the physician. Has it not in an insidious way led the medical profession in some instances to become more "empirical" and "experimental." If this treatment does not hit the spot, that one may. All these cures "without the knife," the cures "without sera" or "poisonous substances."

It is unreasonable to think that with the well systematized propaganda opposing scientific methods, we should not feel the reaction in the medical profession, with its marked influence on that side of medicine, which seems to border on the unknown, because it is "so new," so it is natural that serum and vaccine therapy and prophylaxis should still be looked at with doubt and suspicion by some of our own profession.

Do we not at times expect too much from our vaccine and serum treatments? Are we not liable to forget that it takes time for the body to repair tissues, and that immunity is a process which is very complicated and which we do not by any means fully understand? The final word has not been spoken in regard to dosage or the time through which our treatment should extend, nor have we yet come to any uniform laws that will govern all individuals. There are individual differences and individual idiosyncracies, all of which will take time and endless effort on the part of the medical profession to correlate and so systematize that we may be able to obtain a better working basis.

All sera and vaccines are not used with the sole purpose of producing immunity or curing a disease. In many instances they are used to prevent complications, to lessen the severity of the disease and to shorten its normal course.

I do not mean to convey the impression that all sera and vaccines are successful either as prophylactic or therapeutic agents, but that does not mean that in the majority of cases, if the proper vaccine or serum is employed that we will not get what may be considered marvelous results.

It is needless to discuss the prophylactic value of typhoid vaccine and also the advantages in its use during the attack of typhoid

fever, in shortening the duration of the disease, and markedly diminishing the complication and severity of the disease.

Let us take for instance the whooping cough vaccine, pertussis, which is a more debated issue. In some localities where the prophylactic use of this vaccine has been general, it is almost an unheard of disease. Take the use of this vaccine during the attack. What do we find as the result? A shortening of the duration of the disease, a marked diminution of symptoms and a remarkable lessening of complications that so frequently follow, especially in young debilitated children.

It is needless to discuss diphtheria therapy. It is common property of the laymen today to know the efficacy of anti-toxin for this once dreaded disease. May we not take one of the more recent discoveries in immunology and therapeutics. I refer to the wonderful work that has been done in scarlet fever and measles; we have little to say in regard to the brilliant work that has been done recently in the use of convalescent serum or plasma in connection with measles.

The work of William H. Parker, Rowland G. Freedman, of Sidney B. Haas and Julian Blum and others, is familiar to most of us, and as we have in our midst Dr. R. H. Cowley who has recently had personal experience with the treatment of many cases and the preparation of this serum and has kindly consented to take part in the discussion of my paper, it will hardly be fitting that I should take up any time in discussing the use of the convalescent serum and its prophylactic value in the treatment of measles.

Without going into a scientific discussion of this subject or taking up immunity, let us consider briefly some of the causes of failure in the use of vaccines. In the first place there are vaccines on the market that are inert and useless. This may be due to cultures that have lost their virulence or to a combination in vitro which produces chemical changes that destroy the active principles of these vaccines or due to the improper method used by those who dispense and the physician that uses vaccines, and that is, not keeping the vaccine at the proper temperature, and also not taking into consideration that there is a time limit within which vaccines should be used.

Again the medical profession is sometimes overskeptical in the efficiency of vaccines and we frequently do not take into consideration the fact that each individual is a law unto himself regarding vaccines and sera and that we are treating the individual with a definite purpose and that is to produce immunity or bringing about a cure. This requires on the part of the physician, definite knowledge

and a personal experience with reactions and the mode of action of the various vaccines and sera. We are not supposed to blindly follow the directions in small print on the outside of the vial, stating the number of minims or what-not and the period between doses. That is essential, but it is merely a guide to the physician and he is to be the judge of results and of the dosage that he gives, and he is to grade the dose accordingly. This he cannot do unless he has a thorough understanding of immunology. Also the patient is only too frequently allowed to go without having been tested to see if he is or is not immunized, after receiving the vaccine or serum treatment.

It is wasting time to mention the brilliant results that we have obtained in many cases of our so-called "hay-fever" with the use of proteins and again we may find a case in which the failure shakes our faith in protein therapy, but in these cases of failure there is a definite reason which requires careful study and to do this there must be a thorough understanding of immunology.

Why these failures? The majority of these cases of failure may be attributed to one of three causes: First, incorrect diagnosis; second, individual idiosyncracies to protein reaction; third, improper dosage, both as to amount and in regard to the length of time used in immunization.

Now we come to another phase which is of the utmost importance and that is the diagnosis; a marked advance has occurred in our knowledge along these lines. We have the so-called "skin reaction." These reactions to foreign proteins giving us either a positive or negative answer, indicating whether the patient is immune or susceptible to the disease. We might mention Shick's test, Dick's test, Von Pirquet and the skin test in measles, which are all familiar to us.*

It is necessary that the medical profession become proficient in reading and interpreting these skin reactions. It is not an easy task to read some of our skin reactions in colored races, and I have seen as many as five men, with a wide experience in these tests, admit that they could not definitely say whether they were reading positive reaction or not (Dick's test) when these were made on Hindoo troops in the British army. The pseudo reaction in the white race is not an easy matter to decide upon, but if proper care is taken and certain definite rules are followed, it is remarkable how these difficulties will be diminished.

In discussing the subject of sera and vaccines it might be well to mention some of the bacterial poisons. Some bacteria give off their poison freely even in culture. Others

retain their poison in themselves. There is another group in which their poison have not been found outside of the body. Thus we have the so-called "soluble true toxins" which are secreted by the bacterial cells and the endo-toxins which are liberated when the bacterial cell is damaged or destroyed. The two best known of the true toxin group are those produced by diphtheria and tetanus bacilli. We may take the pneumococcus as an example of those that produce the endo-toxins. Aggressins of Bail are toxic substances that are formed only in the tissues. The Virulins of Rosenow are toxic bacterial products, which inhibit phagocytoses. There are various other Cyto-toxins of various names which act on different cells. The Ptomaines are not developed in the bacterial cells, but are products of protein decomposition caused by bacteria. These ptomaines vary greatly in toxicity and they do not give rise to anti-toxins.

These various toxins, endo-toxins and cyto-toxins immediately suggest to us the selective action of immune sera. This selective action is what differentiates it from normal sera. What causes this special selective action is a question that has not been answered. At times it does act on closely related species, therefore, we may say the reaction is specific only in degree.

This leaves a question still to be answered how its specificity is developed. When we attain a more exact knowledge of the physical and chemical nature of the fundamental reaction of immunity, we will then be able to interpret the various phenomena that today is confronting us in the field of medicine, and it is most gratifying to see the steady progress that is being made in discovering the definite protein, toxins and endo-toxins and so preparing them that they may be used as therapeutic agents.

We are fast approaching the time when every internist will be confronted with the problem of desensitization. The almost universal use of anti-toxic sera as a prophylactic and therapeutic measure, has already begun to bring up several problems which are being seriously considered by certain members of the medical profession.

Anaphylaxis is a complication with which we are acquainted and I do not think that there was a surgeon that served in France who did not more than once wish he had the opportunity, that is the time, to desensitize some unfortunate soldier, when he gave him an immunizing dose of tetanus anti-toxin.

The oracles have not spoken the last word in regard to anaphylaxis nor have we explained the reaction, consisting of a symptom-complex; severe shock, dyspnea, a blood pressure which is difficult to explain, normal,

usually above normal, cold sweats, urticarial eruptions, cough, edema of the lungs, cyanosis, a congestion and enlargement of the liver and spleen, angio-neurotic edema, either a slow or rapid pulse, a weak irregular pulse or a full bounding one, and then collapse; any one of these symptoms or all may occur in a few minutes or it may be a question of hours; these or modifications of these symptoms may appear, their order is variable and their severity depends, to a large extent, on the susceptibility of the patient to some foreign proteins.

Quite a number of explanations have been given, some plausible, some logical and some that help to explain some of these complex manifestations, but to my mind none of the explanations that I have been fortunate enough to see in print have explained our cardiac and circulatory phenomena that appears in the different cases and sometimes manifests themselves in the same case.

To combat anaphylaxis we have adrenalin chloride (epinephrin) and let us not forget the use of pituitrin and atropin sulphate. We are all acquainted with "serum sickness", and the rheumatic pains that follow the use of a horse serum. These reactions are supposed to occur in individuals who are sensitive to foreign proteins and in this group we can include the asthmatic with susceptibility to these proteins. These cases fortunately up to the present have been rare, but with the increased use of sera they will become more and more common and we will have to employ the Besradka method of desensitizing or some modification of this same method more and more frequently in our daily practice.

I have had very severe anaphylactic shock follow three hours after giving the immunizing dose of tetanus anti-toxin where the method of desensitization had been carefully employed. It will not be long before we will have a more accurate knowledge of these complex phenomena and with this knowledge we will doubtless also discover either the method of avoiding it or a method that will lead to a proper treatment of these complications.

There is another type of reaction which follows the intravenous injection of various foreign proteins. This appears from twenty minutes to one or two hours or longer after the injection. It manifests itself by a chilling sensation or a severe chill, dyspnea, and cyanosis, with a rapid rise of temperature. This reaction seems to have nothing in common with anaphylaxis, and all who have used vaccines to any extent have doubtless had this to occur.

We have not tried to name the various sera and vaccines that are at the disposal of the medical profession; the great number that

are being used, the increasing demand and the constant improvement in their preparation and the elimination of the unnecessary toxins and proteins or what-not bear witness to their usefulness to suffering humanity.

It is not a question as to whether we are going to use sera and vaccines, but it lies with the medical profession and to a large extent to the average practitioner, to determine how generally they will be used and how well they will be employed for the good of humanity. This is a challenge which science has placed before us and an opportunity to relieve humanity of many of its ills, the like of which has never occurred in the history of medicine.

Is it not time that all medical schools should give a special course in "Applied Bacteriology"? A course that has to do with the great principles of immunology and that will go into the bio-chemistry of practical medicine (applied medicine). We have our school on Hygiene and Sanitation, and on Preventive Medicine, but the underlying principles in the study of the science of immunology is lacking and the student of medicine only receives a theoretical course as a rule on this subject. We need a practical working knowledge of serology and kindred subjects, that will enable the practitioner to interpret the reactions, and other phenomena which may occur in his use of sera and vaccines. This knowledge should be one of the greatest assets to the student of medicine as he starts into the practice of medicine.

In the past the medical profession has never failed to demonstrate an unselfishness and a willingness to minister to humanity and that self-sacrifice that has made it famous throughout the ages. With that same determination and zeal which has characterized it in the past, it will gladly take up this challenge and embrace the opportunity and so equip itself that the high standard of achievement in the past will be equalled or eclipsed by the present generation.

I have intentionally avoided going into the technical discussion of the subject, but there are some phases of this subject which I feel are essential and should be discussed more fully and I have requested some of our colleagues to take up more in detail certain phases of our subject so that it may be discussed more at length.

I have asked Dr. William A. Jenkins to enter more fully into "Vaccine Therapy" and Dr. R. J. Estill to discuss the "Treatment of Disease with Sera and Vaccines," and Dr. Leon K. Baldauf, the "Sensitization Test and Their Interpretation," and Dr. R. H. Cowley, "Toxins and Anti-toxins and their use in Preventive Medicine and Anaphylaxis," and

we will be glad to hear from any others who may care to discuss this paper.

DISCUSSIONS.

W. A. Jenkins, Louisville: The essayist has requested me to spend just a few moments on discussion and has asked me to limit my discussion to the therapy of vaccines. I shall do so.

In applying vaccines to the field of medicine from the standpoint of therapeutics, the medical profession as a rule falls into two great classes. One of these uses vaccines in this, that and the other disease, in fact, almost every disease. Some of them go so far as to carry a little case along with them containing ten or twelve vials of various types of vaccines and mixed vaccines from which they withdraw with their hypodermic serums a few drops from this one and a few drops from the other, very much as old-fashioned physicians used to take out their saddle-bags and divide their papers and measure out their quinine and capsules and calomel.

Often in using vaccines in this way they are simply going by rote. They have no intelligent conception of just what they are using, just how it should be used or just exactly what results they expect to get by using these things.

Needless for me to say, this is absurd. It is carrying to one extreme. On the other hand, it is quite as much out of order for the other wing of the profession to simply "pooh-pooh" the whole proposition of vaccine therapy simply because we have not subjected the whole process to minute scientific scrutiny and explained every phase of this action.

As is commonly the case, the truth is found between these two extremes. There is a field of usefulness for vaccines. We are to bear in mind two things in the consideration of this subject, and use the knowledge obtained from those two things as our guide in our therapy. One of these is that pathogenic micro-organisms invade the body. These pathogenic micro-organisms injure the tissues. In response to this injury of the tissues, the cells and tissues and fluids of the body respond by a counter-action and they manufacture and throw out and send out antagonistic substances to the invading bacteria and to the changes in substances which the invading bacteria produce. Upon our study of these things, our scrutiny of this action and interaction between these two bodies, between these two types of conditions, will depend the accuracy, the scientificness, and the effect of our therapy upon our knowledge of that.

The doctor has referred to the types of products which the bacteria produce, certain types of toxins, sometimes outside of the bacterial body and again within the bacterial cell they may even produce alkaloidal substances.

That is the bacteriologic science. On the

other hand, when we study the tissues we find that the tissues in the cells produce substances, they produce opsonins and they produce lysins, and they produce hemolysins, agglutinins, precipitins, anti-bodies of various types and sorts, and so forth.

The different bacteria under different circumstances and in different bodies react differently, and the substances produced will be different.

It becomes our duty to keep as closely on the heels of scientists who experiment and who try out and who interrogate these things, namely, the science of bacteriology, serology and immunology, as possible. We must keep as close on their heels from a practical standpoint as we can, and as quickly as they feel they have reasonably certainly demonstrated a certain fact or a certain toxin or anti-body to that certain toxin, we must be ready to accredit that and give it a fair trial in practice.

When even general practitioners don't keep up on these basic principles we are certainly very much in the dark along the line of using vaccines, and the only way for us to use vaccines in our practice intelligently is for us to keep abreast of the information that is furnished by the scientific world along these two lines.

We men in the clinical field of medicine will soon try them out. If they pass we add them to the list, if they don't we drop them. We don't discredit the whole thing because one we have been holding to turns out to be no good. Now and then one turns out to be most excellent.

We have two fields for the application of these things. After we have tried to understand and to inform ourselves on what we are doing, there are two phases. One is the prevention or the prophylaxis, a most wonderful thing, a well recognized thing, standing on an impregnable basis. The other is the use of vaccines as a means of treatment after the given disease is well developed.

R. E. Smith, Henderson, (in closing): There is one thing that I would like to say in the few minutes that I have left, and that is, the medical profession has never failed to do its duty, and it is remarkable the unselfishness and willingness which the medical profession has always manifested. Whenever a challenge has been laid down, that challenge has never been ignored. They have taken it up, and I know that this generation will take up this scientific challenge with the same spirit and the same determination that our forefathers took up the challenges laid down to them. We will either equal their achievements in the past or we will surpass them. For it lies today not for the medical man to say whether he shall use it or not, but it lies today with the medical man to say how he shall use it.

The public will either force the medical pro-

fession to use sera and vaccines or force many of the medical profession out of the profession. There is entirely too great a fund of knowledge and the communications of the world today are entirely too rapid for a thing to occur in England tonight that we don't hear of it tomorrow morning, and this facility of communication has forced the medical profession to get on their toes, so to speak, and be wide awake. If we are not willing to do it ourselves, there will always be someone else who will demand it of us; as unfortunately I saw a physician not very long ago called upon to do, in consultation. He said, "I have never used this vaccine but the family made me do it and I am going to tell you I have never seen such results in my life." He was forced to do it. I have another friend who used the serum for scarlet fever and the temperature dropped from 105 degrees to 100 degrees. It was given at nine o'clock in the morning and at six o'clock in the evening the temperature was 100 degrees. He called me up and said, "That woman's temperature is 100, her throat has cleared up. What shall I do?" I said, "Wait." He replied, "Do you think she is doing all right?"

This is merely an instance to illustrate the skepticism and also the hesitation with which some of the members of the medical profession accept many of our newest and most striking scientific methods of combatting disease. My plea is, that the medical profession be more willing and eager to better qualify themselves to minister to the ills of humanity and to relieve the physical and mental anguish of those whom it is our privilege and duty to treat.

Regeneration of Blood After Hemorrhage.—

Barry and Torrens performed some experiments on dogs to determine whether or not the regeneration of blood after hemorrhage is stimulated by the use of fresh liver substance from a separate animal. Nine dogs were bled to the extent of 3 per cent of the body weight, and given one injection of liver extract intravenously or intraperitoneally. No appreciable differences were noted in their blood from that of the controls in the course of recovery. Three dogs were bled to the same extent and treated by grafting liver substance in the subcutaneous tissue of the neck. Two of these developed sepsis and did not show any improved regeneration of hemoglobin as compared with controls. In the third animal the wound healed by first intention, and it showed better regeneration of hemoglobin than did the control. Barry and Torrens suggest that this experiment lends a little support to the theory that the liver possesses the property of stimulating hemogenesis.

MASSIVE COLLAPSE OF THE LUNG.*

By D. Y. KEITH, J. PAUL KEITH AND
J. C. BELL, Louisville.

Definition: Massive collapse of the lung, termed massive atelectasis by some writers, is a pathological condition affecting a lobe, more than one lobe or an entire lung, in which the part involved reverts to a condition similar to that of foetal atelectasis, becoming markedly decreased in volume, essentially airless and the alveolar walls approximated. This term does not include those cases where collapse is due to positive intra-pleural pressure, for example, in hydro, pyo or pneumo-thorax.

History: In this paper no attempt will be made to review fully the literature on this subject since it has been so well presented in recent papers by Jackson and Lee (1), Scott (2), Churchill (3), Gwyn (4), and others.

According to Churchill the condition was noted by Gairdner in 1853. He considered it to be of relatively common occurrence in adults. In 1878 Liehtheim (5) reported experimental massive collapse in rabbits produced by inserting plugs into the bronchi. Thirteen years later Pearson Irvine reported a case of post-diphtheritic paralysis in which the upper half of the chest was retracted and limited in mobility, and he suggested that a complete collapse of the upper lobes was probably present.

But to William Pasteur is due the credit for establishing the condition as a clinical entity. In 1890 (6) he reported fifteen cases of diphtheritic paralysis of the diaphragm with post-mortem findings in some of the fatal cases. In these he noted that one or more of the lobes of the lungs were shrunken, apparently airless and that they sank when placed in water. Eighteen years later (7), he reported the occurrence of massive collapse, proven by a post-mortem examination, in the following cases: generalized peritonitis, peptic ulcer with severe gastralgia, hepatic abscess, and in a case of severe burn of the oesophagus and stomach resulting from drinking strong acid. In 1910 (8) he reported sixteen cases of what he termed "active massive collapse" occurring among 201 post-operative pulmonary complications; an incidence of approximately 8%. He believed that this condition was found in certain cases, without obvious obstruction of the air passages, and that it probably was always due to a disturbance of the muscular mechanism of respiration.

Sir John Rose Bradford (9) observed massive collapse relatively frequently in chest wounds during the late war. Many of these cases were non-penetrating wounds of the

chest wall, and, in some instances the collapse occurred in a lobe on the side opposite the injury.

Since Pasteur's original report a number



Case. P. H. 24097

Film taken 5 days after collapse showing the right lung field to be slightly less dense and the heart and mediastinal contents to be in essentially the same positions.

of authors have reported cases of massive collapse. In a recent paper Scott collected 64 reported cases following operation. Collapse has followed operations of the head, neck, thorax, abdomen and pelvis. It has been noted in injuries of the pelvis, fractures of the femur, during the course of lobar pneumonia, as a complication of pericarditis, and with infarcts following pulmonary embolism.

Types: There are at least two distinct types of this condition. In the first there is obvious obstruction of the air passages, examples being collapse resulting from obstruction by a foreign body in one of the main bronchi, from obstruction due to pressure of an extrinsic tumor or from an aneurysm, and from obstruction by a tumor primary in a bronchus. In these cases respiratory exchange is stopped, the imprisoned air is absorbed and collapse follows. The second group includes cases where obstruction of the air passages is, in most instances, not obvious, and where disturbances of the muscular mechanism of respiration are present. Among these are post-operative massive collapse, following paralysis of the diaphragm or intercostals, or following injuries of the chest or pelvis. There is also quite a large group where collapse is seen complicating acute inflammatory conditions of the chest and abdo-

*Read before the Kentucky State Medical Association, Frankfort, September 20, 21, 22, 23, 1926.



Case 2. P. H. 5775

Film of the chest 8 days after onset of collapse showing an essentially normal lung field except for a little clouding at the left base. Heart and mediastinum in their normal positions.

men. Further discussion in this paper will be limited to the second group.

Etiology: Pasteur believed that collapse followed reflex inhibition or paralysis of the muscles of respiration and that there was no obvious obstruction to the air passages. Rose Bradford was of much the same opinion and presented post-mortem evidence that no obstruction was present.

Elliot and Dingley (10), on the other hand, felt that weakness or inhibition of the respiratory muscles was a factor in collapse, but probably only in that this permitted mucus to collect in the bronchi causing an obstruction which in turn was followed by collapse. There have been a number of adherents to each theory but fatal cases have been few and post-mortem findings rare. For this reason it has been difficult to establish the etiology.

The most recent contribution to this phase of the problem has been by Jackson and Lee from the bronchoscopic clinic in Philadelphia. These authors have made direct bronchoscopic examinations very soon after the occurrence of massive collapse, and in one case a mucous plug was found in the main bronchus of a collapsed lobe. This was removed and almost immediately relief of symptoms and clearing up of the signs in the chest followed. At post-mortem examination of a case included in this report, mucus was found obstructing the bronchus of a collapsed lobe. They believe that inhibition of respiration results in increase of the bronchial secretions retained, because of lessened evaporation, and that this

favors obstruction. They feel also, that the cough reflex is frequently inhibited either by drugs or because of pain, and that this too, permits mucus to accumulate. The theory advanced by Elliott and Dingley finds confirmation in the work of these investigators. It is difficult to explain a few of the cases of massive collapse on this basis, but, on the whole it appears to be the most reasonable one, and probably will be confirmed by future investigation.

Pathology: In gross, the lung is found to be markedly decreased in volume, dark bluish in color, and it sinks when placed in water. Microscopically, the alveoli are collapsed and the vessels markedly engorged.

CLINICAL FINDINGS IN POST-OPERATIVE MASSIVE COLLAPSE.

The onset is usually abrupt, occurring in most cases within the first 24 hours after operation. However, collapse has developed as late as seven to ten days post-operative. The most constant symptoms are pain in the portion of the chest involved, dyspnoea, cyanosis, tachycardia and decided limitation in mobility of the thorax over the area of collapse. The temperature is usually moderately elevated and a productive cough with considerable mucoid sputum is almost constantly present. The sputum is rarely, if ever rusty.

Physical examination shows the region affected to be dull or almost flat to percussion and the heart to be shifted toward the collapsed side. In one group of cases the breath and voice sounds are suppressed and fremitus diminished. In the second group all of



Case 2. P. H. 5775

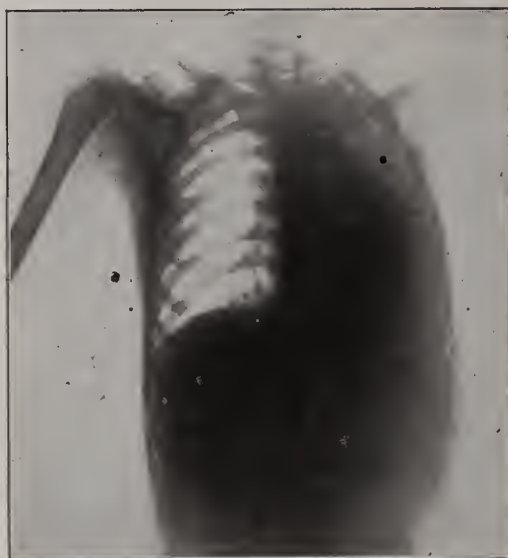
Film of the chest 4 days after the onset of collapse showing clearing of the upper two-thirds of the left lung field with less displacement of the heart and trachea.

these are accentuated and rales are usually present.

The displacement of the mediastinal contents depends upon the fact that the two sides of the chest are separated by the mediastinum which acts as a flexible diaphragm, capable of displacement to one side or the other, depending on variations in pressure. In hydrothorax, for example, the negative pressure on the affected side is diminished and at times a positive pressure may develop. As a result the mediastinum shifts toward the normal lung decreasing the volume in this side of the thorax and increasing it in the affected side in an attempt to establish equilibrium. In massive collapse the negative pressure is increased in the involved side because of the decrease in the volume of lung tissue, hence the mediastinum shifts toward this side.

X-Ray Findings: Examination, shortly after collapse, shows a very dense shadow in the portion involved. The density is frequently as great as is seen with fluid. The heart shadow is seen to be shifted toward the portion collapsed and the diaphragm is found to be high and fixed. Later examination shows decrease in the density of the shadows, gradual shifting of the heart shadow to its normal position, and resumption of the normal movements of the diaphragm.

Differential Diagnosis: Massive collapse may be confused with lobar pneumonia but in the latter condition the heart shadow is never displaced toward the diseased area un-



Case 2. 5775 P. H.

Chest film taken 3 days after operation showing marked increase in the density of the entire left lung field with obliteration of the outline of the heart and diaphragm and displacement of the trachea and heart toward the left, a typical x-ray picture of massive collapse of the left lung.

less collapse complicates it. Hydro, pyo or haemo-thorax may also be mistaken for it. But, in these conditions, the heart shadow is displaced away from the area involved, while in collapse, the displacement is in the opposite direction. In some cases the physical signs of the side opposite the region affected may be suggestive of a pneumothorax, because of compensatory emphysema, but examination of the involved side and x-ray findings should determine the diagnosis.

Course: The collapsed area may clear up within a few hours, with re-expansion of the lung tissue, disappearance of physical signs and with return of the heart to its normal position. However, in other cases the return to normal may be very gradual extending over a period of from several days to weeks. The condition in itself, is rarely fatal, and permanent changes in the lung have not been reported. However, it may be a dramatic and at times alarming incident in the post-operative course and may lengthen materially the period of convalescence.

Report of Cases: Case 1. A moderately obese, white, female patient, age 70, was admitted to the Presbyterian Hospital in New York with a history and symptoms suggestive of an acute exacerbation of chronic cholecystitis. Physical examination showed distention of the abdomen with marked spasm and tenderness in the right upper quadrant. The other findings were irrelevant. A cholecystectomy was done July 6th. The gall bladder



Case 1. P. H. 24097

Film of the chest taken approximately 6 months after the onset of collapse showing the two lung fields to be of equal density and the diaphragm to be normal in appearance. The heart shadow is in its normal position. There is still displacement of the trachea above the levels of the clavicles due to an adenoma of the thyroid.



Case 1. P. H. 24097

Film of chest 4 days after onset of collapse. Marked increase of density in entire right lung field with displacement of heart and trachea.

was found to be distended, the walls very thick and numerous stones were present.

The post-operative course was quite stormy, the temperature varying from 99 and 102, the pulse 95 to 105 and respirations 20 to 30 for the first week. The pulse remained high but the temperature and respirations returned to normal at the end of this period. Ten days after the operation the respirations suddenly rose to 30 and patient complained of some pain in the right lower chest. Physical examination showed the right posterior chest to be very dull upon percussion, the voice and breath sounds almost absent and the heart to be displaced toward this side. X-ray examination showed a dense shadow in the right lower chest with displacement of the heart and trachea toward it. The patient's condition did not permit a fluoroscopic examination and the exact position of the diaphragm could not be determined because of the shadow of the liver. A diagnosis of post-operative massive collapse was made. Physical examination the following day showed slightly less displacement of the heart with some increase in the voice and breath sounds. X-ray examination showed the shadow in the right lung to be a little less dense and the heart to be a little nearer its normal position. The signs in the chest gradually cleared up and the heart and trachea returned to their usual position. Thirteen days after the onset of collapse, x-ray examination showed the right lung field to be clear and the heart shadow to be in its normal position. Films of the chest

six months later showed the lung fields and heart to be normal in appearance.

Case 11. A white school boy of 13 entered the Presbyterian Hospital May 10, 1922 with a history of acute abdominal pain at intervals for six weeks accompanied by vomiting. Examination showed distinct tenderness and rigidity of the right side of the abdomen with visible peristalsis. Although the bowels had continued to move, the possibility of obstruction was considered and laparotomy done May 15th. An acute appendix was found and removed and no evidence of obstruction noted. Three days after operation the patient became cyanotic, respirations became rapid and he developed a cough with considerable mucoid sputum. Physical examination showed the left chest to be flat with greatly decreased voice and breath sounds and decreased fremitus. The diaphragm on the left was found to be very high and fixed. X-ray examination showed a very dense shadow in the lower two-thirds of the left chest with marked displacement of the heart and trachea toward this shadow. The diaphragm was high and immobile. Diagnosis of post-operative massive collapse was made. The following day the patient was still cyanotic and the heart and mediastinum still markedly displaced. The next day there was little less dullness over the left chest. X-ray examination four days after the collapse took place showed the lung to be more radiable and the heart and mediastinum gradually returning to their normal locations. Examination five days later, the twelfth day post-operative, showed the lung fields to be approximately normal in



Case 2. P. H. 5775

Film of the chest taken 3 days before operation showing normal lung fields and normal position of the heart and diaphragm.

density and the heart and mediastinum to be in their normal positions. Physical examination showed approximately normal findings in this lung. The patient then developed definite symptoms of acute intestinal obstruction and the second celiotomy was done. A peritoneal band was found obstructing the colon near the hepatic flexure. It was ligated and cut and cecostomy done but the patient did badly, developed gangrenous stomatitis and died seventy-two days after admission to the hospital.

SUMMARY.

1. Massive Collapse of the lung is a definite clinical entity.

2. Cases have undoubtedly been unrecognized in the past.

3. The etiology is still in dispute but failure of the muscles of respiration to perform their work properly and obstruction of the air passages seem to be two essential features in the production of massive collapse.

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DISCUSSIONS.

B. F. Zimmerman, Louisville: Dr. Bell has presented a very interesting resume of the work that has been done on massive collapse of the lung, and he has shown us some very instructive pictures.

It is hardly conceivable that a condition as common as this is could have escaped the diagnostic acumen of the masters of medicine down to 1906 or 1908. There is no condition of the thorax of the lungs that produces any physical signs that can possibly be confused with this. We know that now that he has shown it.

Then came on the World War and the cases multiplied following the injuries to the chest. It is a condition that concerns every practitioner of medicine or surgery. It is not only seen in surgical cases, but it is seen in medical cases, pleuritic infection, pericarditis effusion, aneurysms, neoplasm, in diphtheritic and post-diphtheritic conditions.

When we find a patient with dullness on one side of the chest we expect to find a condition on that side of the chest, a fullness such as in effusion, pleurisy with effusion or empyema. Always, unless it be a chronic condition like pulmonary tuberculosis that has existed for a long period of years where we find a shrinkage of the chest, we expect in these acute conditions

when we find the dullness to see the heart, the mediastinum displaced to the opposite side. We see just the opposite in this case. Instead of a full chest we see sunken upper ribs and drooping lower ribs, with the heart displaced to the side of the lesion, a limitation of motion, a dullness on percussion, depending upon the extent of the atelectasis, suppressed breathing in the earlier stages in the massive type where the entire lung is involved, sometimes very hard and very loud bronchial sounds.

On the opposite side you get a prominent hyperresonance.

I have seen two of these cases and I was undecided whether I had a pneumothorax on the one side pressing the heart with an increased pressure pushing the heart over. Of course the x-ray picture clears it up. If we had x-ray pictures of all these pulmonary complications following chest injuries, and where crises occur in pulmonary effusions or pleuritic condition, we would find a great many more of these cases than are commonly being reported today.

We wonder sometimes how many of the acute cardiac collapses, acute pneumonias developing after appendectomy, after cholecystectomy, within twenty-four or thirty-six hours and clearing up rather rapidly, we wonder sometimes how many of these are really due to massive collapse of the lung. We don't feel like taking the patient in that condition up to the x-ray. It is not necessary if you really have involvement of the major portion of the lung because your physical signs are so clear that you can't possibly make a mistake.

The onset is sudden, pain or more frequently a feeling of oppression, cyanosis, rapid respiration and extremely rapid pulse, temperature elevated somewhat, but not as high as it usually is in pneumonia. These cases will sometimes clear up almost as quickly as they come, within twenty-four or thirty-six hours. You can readily understand why that is.

You can readily understand that if we accept the theory that the condition is caused by the plugging of the bronchus as seems to be the belief of most investigators, when that plug is removed the lung suddenly expands and the patient is on the way to recovery and is practically well.

As to the etiology, there is still a difference of opinion. Most people believe it is due to a plugging, stoppage of the bronchus, and a subsequent absorption of the air from the alveoli of the lung.

The earlier cases were reported as post-diphtheritic paralysis. That does not necessarily mean that the weakness of the diaphragm and the respiratory muscles were responsible for the condition. It may mean that that favored the accumulation of mucus which plugged the bronchus. Until further study has been done we

must, I suppose, conclude that either condition can produce it.

Another, I believe Dr. Bell mentioned it in his paper, is an inhibitory reflex. That sounds very plausible, but until the physiologists tell us that such a reflex is possible, I don't believe we can conscientiously say that is a cause.

Then there comes the possibility of vasomotor disturbance, emboli, especially following abdominal operations, acute edema in the mucous membrane of the bronchi, of course foreign bodies.

I am very glad indeed to have had the pleasure of hearing this paper. I think it will probably stimulate some of us to observe in cases of acute pulmonary crises and study a little more closely our physical signs and we will be able in the future even without the aid of the x-ray to make a diagnosis of this condition much more often than it has been made in the past because of it.

SYMPOSIUM ON SCARLET FEVER

THE ETIOLOGY AND EPIDEMIOLOGY OF SCARLET FEVER.*

By EDW. P. WHISTLER, M. D., Louisville.

Etiology: Investigations as to the cause of scarlet fever have been actively in progress for many years, and in these investigations the constancy of hemolytic streptococci, of one strain or another, associated with the disease led many of the investigators to believe this organism to be the causative factor. Observations of clinicians of a scarlet-fever-like-rash in certain cases of wound infection and in puerperal fever, led them to believe that there was a close relationship between certain strains of hemolytic streptococci and scarlet fever; but this organism was held to be a secondary invader, from the fact that they were not able to produce scarlet fever in animals from the secretions or cultures of hemolytic streptococci obtained from the throats of scarlet fever patients.

In 1902 Moser published a report of good therapeutic results obtained by a serum produced by the injection of strains of streptococci obtained from cases of toxic scarlet fever.

In 1905 a Russian investigator, Savchenko, showed that serum produced by the method of Moser contained not only antitoxic bodies but streptococcic bactericidal bodies as well. He was able to produce an antitoxic serum, and a bactericidal serum; the antitoxic serum by injecting into the horse the filtered broth in which the organisms were grown, and the bactericidal serum by injecting into the horse the organisms.

In 1907 another Russian investigator, Ga-

britschewsky, made a vaccine of the bouillon in which streptococci had grown 4 days and the streptococci themselves, this heated to 60° C. to kill the streptococci, and preserved with 0.5 phenol, this on injection into children gave a scarlatiniform rash and in some a sore throat and strawberry tongue, and in some few vomiting. He found that the second and third doses, although twice and four times as large, rarely produced a rash; this he considered as evidence of developing immunity. With these investigations and the results obtained from serums and vaccines prepared from the streptococci obtained from throats of scarlet fever patients, there was evidence that some strains of the streptococci was the cause of scarlet fever.

Attempts to produce experimental scarlet fever in animals by inoculation with throat secretions, or cultures of hemolytic streptococci obtained from the throats of scarlet fever patients, all met with failure after numerous attempts.

In 1922 and 1923 George Dick and Gladys Dick, in a series of 100 cases, found hemolytic streptococci present in all cases, but of different strains, 16% fermenting mannite, 84% did not ferment mannite; in 1923 they reported a case of experimental scarlet fever produced in man by inoculation with the mannite fermenting strain; the organism was isolated from the experimental disease and again grown in pure culture.

A similar attempt was made with the organism that did not ferment mannite; with this they also produced scarlet fever in man, and from the case the organism was isolate and grown in pure culture. The requirements of Koch's laws appear from this to have been fulfilled by the streptococcus used in these cases.

Epidemiology: Scarlet fever occurs in all parts of the world although zones of immunity are known to exist; such zones are found near the tropics where high temperatures combined with great humidity are unfavorable to the development of the disease. In the United States the zone of comparative immunity is located between 30° and 35° latitude north including the States of South Carolina, Georgia, Alabama, Mississippi, Louisiana and Texas; but in general epidemics the disease occurs in all points within these zones.

Season-Altitudes: The effects of seasonal influences vary in different regions. In Western Europe most epidemics occur in the autumn months, while in the United States the late winter and early spring months show the highest incidence. High altitudes seem to be more favorable to the disease than low ones.

The epidemics in this area—Kentucky—are in the late winter and early spring, so it seems

*Read before the Jefferson County Medical Society, May 3, 1926.

seasons do play a great part in the development of the disease from the fact that we do not have our outbreaks during the first months of the fall when children are brought together at the opening of the school term as is the case in the outbreaks of diphtheria.

Sex: Sex does not seem to be a factor in the incidence of the disease.

Age: Infants are rarely affected, the disease occurring chiefly between the ages of three and ten years, reaching its greatest height at about the age of five, with a gradual descent until the fifteenth year, after that a marked decline; it is rarely seen after middle life.

Race: The incidence is much higher in the white race than in the negro, about six times as great; the death rate is in about the same proportion.

Social Conditions: Scarlet fever is not a class disease, except in so far that poverty, with its crowded and insanitary conditions, predisposes toward disease in general.

Modes of Conveyance: The disease is communicable by direct contact, or through intermediaries, human beings, flies and domestic animals. Out-breaks have occurred in which the disease was transmitted through the milk supply, and investigation will usually reveal the presence of the disease in some helper of the dairy.

There is still the question of the viability of the organism causing the disease, but it is known that as long as the secretions remain moist, the disease may be transmitted by the medium carrying the secretions.

There are certain persons who have become carriers of the disease; that is, who after having it and after the usual quarantine period, leave the hospital and infect other members of the family. Are those true carriers (as in the case of diphtheria carriers) or have they become reinfected in the hospital wards from contact with new cases? It seems that reinfection is the case, for patients in isolated homes where the usual quarantine period—four weeks—is enforced, and discharges if any have cleared in these cases before release, rarely if ever transmit the disease.

Quarantine: With the advent of scarlet fever antitoxin the question naturally arises, will this shorten the quarantine period? There is no evidence to show that any serum used at present in scarlet fever is in any sense bactericidal, and until a serum is produced that will be bactericidal, and until characteristics of the causative organism become so well known to us that we may by cultures say definitely that the case is clear of the organism, our quarantine period must of necessity remain as at present.

SCARLET FEVER: SYMPTOMS, TYPES, AND COMPLICATIONS.*

By JAMES S. LUTZ, M. D., Louisville.

Scarlet fever is a disease of childhood. It occurs in children between the ages of one and eight years in about ninety per cent of cases. However, it may develop at any age—from the newborn infant to the third decade of life.

One attack of scarlet fever usually renders the individual immune from this disease for the remainder of life. There are a few persons who have had a second attack, but this does not occur nearly so frequently as in measles.

The incubation period of scarlet fever is short, there being an interval of only three to five days from the time of exposure until symptoms begin to manifest themselves. If symptoms do not appear before the eighth day the individual will not develop the disease from that exposure; but this does not mean that he is immune, as he may contract it from some other unknown exposure at a later date.

The prodromal symptoms of scarlet fever are of short duration and in some instances may pass unnoticed. There are generally present slight fever, sore throat, headache, general myalgia and loss of appetite; and the family will often conclude that the child is developing tonsillitis. Within ten to eighteen hours the active symptoms will begin. In children under three years there will often be convulsions, in older children perhaps a distinct chill, and in both there will nearly always be vomiting. It is seldom that vomiting recurs after the initial symptoms. The temperature is high, ranging from 101° to 106° or 107 F.; the pulse is accelerated, not uncommonly so rapid that it cannot be counted accurately. A pulse rate of 150 to 180 is not rare. This acceleration of the pulse will continue well into convalescence. There is no more change in the respirations than would be expected from the high temperature. Bronchitis is uncommon.

The throat is inflamed and sore. The inflammation extends to the tonsils and pharynx, then gradually to the pillars of the fauces and hard palate. Often the entire cavity becomes inflamed. The mucous membrane is very red and congested. The tonsils are enlarged, and membrane often forms over them resembling the membrane found in diphtheria. In fact, it is not uncommon for these two diseases to coexist. Cultures should be made whenever a membrane is present, and I think it advisable to administer a dose of antitoxin if a suspicion of diphtheria exists, be-

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cause one does the patient no harm and may save his life. If one waits for the laboratory report the patient may be overcome by the poison of the combined diseases before the antitoxin can be given. The so-called strawberry or raspberry tongue is often present; but this also occurs in other eruptive fevers, the reddened papillae showing the white coat in three or four days. There is some conjunctivitis, and often a considerable amount of pus forms in the eyes. There is congestion of the mucous membrane of the nasal cavities with discharge which becomes purulent the third or fourth day.

Loss of appetite is the rule, and because of painful deglutition the patient will eat very little. Diarrhea occurs in some cases and at the beginning of the attack may be misleading, causing the diagnosis of gastro-enteritis to be made; but the appearance of the eruption clarifies the diagnosis.

There is always some adenitis, especially of the cervical lymphatics; and these sometimes suppurate and prolong the course of the disease.

The blood picture in scarlet fever, given by Tileston and Locke, is as follows (quoted):

(1) The blood of scarlatina in children differs from that in adults only in proportion to the difference of normal blood at the different ages:

(2) A slight secondary anemia is the rule in all but the very mild cases, varying directly with the severity and duration of the disease. The reduction in hemoglobin is from 5 to 25 per cent, and in erythrocytes from 100,000 to 700,000 per cubic millimeter; both return to normal after a period of several weeks.

(3) A hyperleucocytosis almost invariably accompanies the disease and pursues a characteristic course; rising abruptly in the second to eighth day (18,000 to 40,000), the count diminishes rapidly for a few days, then more gradually to reach normal in convalescence at the end of three to six weeks:

(4) During the stage of invasion and eruption the polynuclear leucocytes are both relatively and absolutely increased, but decrease rapidly with the reduction of leucocytes until convalescence, when they may become relatively, though never absolutely, below normal. The mononuclears take exactly the opposite course. With the onset the eosinophiles disappear entirely or are greatly reduced, to rise again to normal when defervescence begins. This eosinophilia persists until late convalescence:

(5) Complications, with few exceptions, exert no influence upon the course of the blood.

The characteristic symptoms of scarlet fever

is the peculiar eruption which makes its appearance in 27 per cent of cases at the end of the first day, and in 43 per cent during the second day. The eruption first shows upon the neck and shoulders, and usually spreads over the entire body, except for an area around the mouth, called the "circumoral pallor," giving the face a peculiar appearance. The eruption fades in the order of its appearance, and is usually gone in seven days. The eruption comes as a blush and covers the skin with seldom any area of white showing, in contradistinction to measles. In a day or two a punctate condition develops which gives the sensation of rubbing the finger over velvet. On pressure the redness fades, but returns immediately upon removing the finger.

The blanching test of Schult-Carlton is used often to clarify a questionable diagnosis, as injection of the serum will cause a permanent blanching of the skin for an area around the point of injection in scarlet fever, and not in other eruptive fevers.

The patient complains of itching and burning for the first few days. At the end of five to seven days desquamation begins, and is usually in proportion to the temperature as to extent; but desquamation is always present in greater or lesser degree, beginning at the edge of the nails, where it is most easily seen. Of course where the skin is thickest the desquamation will be most marked; and over the body it is so fine that it cannot always be detected.

The cutaneous sign described by Pastia is of some assistance in making the diagnosis. It is a linear pigmentation in the folds of the skin and is fairly constant and persists after the eruption has faded; however, it does show occasionally in measles, but not in erysipelas.

As to the types, scarlet fever may be divided into (a) abortive, (b) mild, (c) moderate, (d) toxic, (e) septic, and (f) surgical.

The abortive type is sometimes seen in families where the disease is present. One of the children may be slightly ill for a day, but not show the characteristic symptoms.

The mild type is the one most commonly encountered. The patient shows a little fever, slight eruption, and a small amount of desquamation, with little or no constitutional symptoms.

The moderate forms are those in which the disease runs its acute course in a few days; but any of these cases may become toxic or septic very quickly.

The toxic types are the ones where all the mentioned symptoms are very severe, and the patient may die within the first twenty-four or forty-eight hours after onset of the attack.

The septic cases are those in which suppurative processes play a prominent part, and

sometimes there is a blood stream infection showing the streptococci present in the blood. These cases are very fatal.

The so-called surgical scarlet fever represents those cases which follow operations, and especially puerperal fever. It is questionable whether this type should be called scarlet fever. Streptococcal infection with scarlet fever symptoms would be a truer name for this condition.

Complications: There are so many complications and sequelae of scarlet fever that a book could be written and not describe all of them. The most common is suppurative otitis media, which occurs frequently, and unless this is borne in mind will often cause the medical attendant considerable worry because of continued fever after the eruption fades.

Diphtheria often occurs at the same time that scarlet fever does, so that a culture should be made from all throats showing a membrane.

Nephritis is the complication that is so much dreaded; but statistics show that a very small percentage of cases have this and that it is just about as prone to occur in mild cases as in severe ones; and cases that show albuminuria during the acute symptoms will not show any trouble in later life. There is sometimes complete anuria with great swelling of the body.

Pyelitis is another complication that occurs more frequently than is usually given credence.

Suppuration of the lymphatic glands may ensue and unless incised and drained early will often cause large sloughing areas.

The heart is not often attacked. Myocarditis and endocarditis are the chief forms which have been noted.

Iritis and retinitis sometimes occur with disastrous results.

Synovitis and arthritis are sometimes serious complications.

In fact, no organs nor tissues of the body are immune from invasion by the streptococcus scarlatinae, and as any attack of scarlet fever may be attended by serious complications, it behooves us to be on the lookout for them.

Are Ambard's Laws Erroneous?—Goldberger concludes that Ambard's ureosecretory formula is constant in healthy persons. Changes in the cardiovascular apparatus, in blood circulation and in the endocrine glands influence the urinary output of urea. When these extrarenal factors are excluded, a high Ambard's constant points to disturbed excretion of urea due to renal insufficiency. This is observed in uremic nephritis or in mixed forms of nephritis.

PREVENTION AND TREATMENT OF SCARLET FEVER.*

By JAMES W. BRUCE, Louisville.

Prevention: Passive immunity by the injection of one-half the therapeutic dose of scarlet fever antitoxin can be easily accomplished. However, this immunity lasts but three to eight weeks and in many cases leaves the person sensitive to horse serum. For these reasons prophylactic injections should not be used in ordinary practice. Their chief value lies in the control of epidemics in institutions where individual observation may be difficult. However, even in institutions it is better if possible to do Dick tests on all contacts and isolate under close observation those with positive tests.

Active immunization is still in its infancy. It has been shown by the Dicks that it is necessary to inject 10,000 or more skin test doses of scarlet fever streptococci toxin to produce immunity with any certainty, and for any length of time. The injection of as much toxin as 10,000 skin test doses produces severe reactions unless preceded by several smaller doses. The technique which they followed consisted of three injections given at five to seven day intervals of 500, 1,500, and 10,000 skin test doses. In this way they were able to immunize susceptible persons and their immunity has persisted as long as they have been under observation, i. e., eighteen months. The persons whom they immunized were later intimately exposed to scarlet fever and none contracted the disease. The immunity begins within two or three weeks after the toxin injections, in this way differing from the immunity to diphtheria which takes several months to develop. The question of the development and persistence of immunity can be accurately determined by the Dick test.

Reactions sometimes follow the injection of scarlet fever toxin consisting of malaise, fever, and rash. However, proper regulation of the dose of toxin should minimize these. Active immunization to scarlet fever, although a struggling infant at present, promises great things for the future.

Treatment: The first streptococcus antitoxin was developed by Moser in 1902. He injected living cultures of streptococci which had been taken from the throats of scarlet fever patients, and grown in beef broth for four days, into horses and made a serum. This serum was of course both bactericidal and antitoxic. Moser obtained good results in treating scarlet fever with his serum. Since his time various streptococcus serums have been used, but because of lack of potency and spe-

*Read before the Jefferson County Medical Society.

efficacy, and due to serum disease resulting from the use of unconcentrated and unrefined serum, they have gradually fallen into disuse.

In 1923 Dochez of the Rockefeller Institute developed a scarlet fever serum using almost the same method as Moser. He has obtained good results with his serum. A few months later the Dicks developed a serum by injecting horses with scarlet fever streptococcus toxin. This serum is of course antitoxic but not bactericidal. It is thought by most observers that the bactericidal element is unimportant and that the antitoxin is the all important part.

Men who have had wide experience in the use of scarlet fever antitoxin, such as the Dicks, Dochez, Park, Zingher and many others, believe that it is very valuable when used early and in sufficient dosage. In most cases the fever subsides within twenty-four hours, the toxemia is reduced, and a severe case becomes a mild one. Antitoxin should be used in all moderate and severe cases and it is useful as long as the rash lasts. It is questionable whether it is advisable to use it in mild cases as the serum sickness may be worse than the disease. However, it is often difficult to tell at the onset whether the case will be mild or severe and the longer we wait the less effective is the serum.

The effect of antitoxin on complications is still an undecided question. The results of most observers are that complications are not decreased as much as we hoped they would be. The Dicks believe that complications are very much reduced, but most other observers do not support them on this point.

The dose of antitoxin is also a matter which must be developed more thoroughly. The consensus of opinion is that 5,000 to 10,000 units is the proper therapeutic dose. There are about 3000 units in most of the therapeutic preparations on the market. The definition of a unit of scarlet fever antitoxin adopted by the U. S. Public Health Service is the amount necessary to neutralize 100 skin test doses of toxin.

Antitoxin can be given intramuscularly or intravenously. Intravenous injection will turn the Dick test negative in about two hours. Intramuscular injection will do the same thing in six to eighteen hours. My own preference is the intramuscular route because reactions are quite common following the intravenous route. This is particularly true of the concentrated antitoxins which are most popular because of their small volume.

Besides specific serum therapy we have local and general constitutional treatment for scarlet fever.

Local treatment of the nose and throat has

for its object the removal of secretions from the nose and throat. Swabbing the throat with silver nitrate, mercurochrome and other antiseptics probably does a certain amount of good when the work can be done with the full cooperation of the patient. However, in young children this is usually impossible and very little benefit is accomplished. Hot gargles of normal saline or soda solution or boric acid solution are beneficial and can be used to advantage in patients who know how to gargle. The most helpful local applications are in the form of drops instilled into the nostrils. The object of this method of treatment is to keep the nares cleared of secretions thus preventing obstruction of the outlets of the paranasal sinuses. One of the commonest complications of scarlet fever is otitis media and it is thought that by keeping the nasal ends of the eustachian tubes clear, this can often be prevented. Various substances can be used in this way. Some prefer aqueous solutions, e. g., argyrol, mercurochrome, saline, or soda. Others prefer an oily base such as liquid petrolatum with camphor, menthol, or eucalyptus dissolved therein. My own preference is argyrol twice a day with two hourly injections of an oil preparation. The medicine dropper is the best method of administration. Atomizers do not inject sufficient volume of fluid. Nasal irrigations on the other hand inject too much fluid and are likely to wash infectious material into the sinuses and middle ears.

Moderate use of the salicylates and the less depressing antipyretics, e. g., phenacetin and antipyrin will make the patient much more comfortable and add little if any risk.

There are three substances which should be freely administered in any fever. These are water, sugar, and alkali. The importance of these lowly but essential materials is often overlooked by the physician and not appreciated by those attending the patient. Free ingestion of water is necessary for the elimination of toxins. Sugar is the safest food and is less apt to upset the digestion and metabolism. We must remember in this connection that table sugar (saccharose) is too sweet to be administered in large quantities and better success will be had with Karo corn syrup or milk sugar (lactose). Alkali, of course, offsets the excessive production of acid that occurs in fever. Acidosis hangs like a cloud over the head of every feverish child and the free exhibition of these three substances makes acidosis impossible.

Most of the serious complications of scarlet fever, such as nephritis, endocarditis, and arthritis begin during the third week. For this reason it is important to keep all patients in bed for full twenty-one days. If this pre-

caution is observed it is thought the incidence of the above mentioned complications will be lessened.

The diet should cause as little strain upon the kidneys as possible. For this reason a low protein, low salt diet is recommended.

Complications must be treated as they arise, and in a paper of this length it is impossible to enter into a discussion of this phase of the subject.

DISCUSSION.

Phillip F. Barbour: I cannot agree with one of the essayists (Dr. Lutz) that the diagnosis of scarlet fever is always easy. In severe cases with typical symptoms the diagnosis entails little difficulty; but mild cases with slight, evanescent rash, slight vomiting and moderate temperature elevation,—which are common manifestations of other affections of childhood—many present no symptoms positively indicative of scarlet fever. I have seen quite a number of cases of that character, and have had other physicians see them with me, and still we were unable to make a positive clinical diagnosis. In obscure cases of that kind I believe it is wise to adopt the plan of isolating the children to prevent dissemination of the disease in the event it proves to be scarlet fever. Very mild types of scarlet fever with atypical symptoms are sometimes certainly quite puzzling and may be deluding.

The blood picture described by Dr. Lutz shows a higher leucocytosis than I have observed. Usually the leucocyte count ranges between 12,000 and 15,000; I have never seen it as high as 25,000 to 30,000. In practically every case coming under my observation eosinophilia has persisted throughout the course of the disease.

In the Cook County Hospital (Chicago, Illinois) some years ago Dr. Blott stated it was impossible to differentiate the rash of scarlet fever from that of influenza; that he always based the diagnosis upon the leucocyte count; that in influenza the leucocyte count rarely exceeded 6,000, whereas in scarlet fever it ranged from 12,000 to 20,000; and that he made the differential diagnosis solely on the character of the blood picture. While I am not sure this has been substantiated by other observers, yet we know that in other diseases rashes may occur that closely resemble the eruption of scarlet fever. I have often seen children with vague symptoms of digestive disturbances who had rashes which caused considerable diagnostic confusion for two or three days.

A most valuable local measure in the treatment of scarlet fever is to keep the nose and throat clean. When this is done the disease usually assumes a milder course and complications are less frequent. For this purpose I have found argyrol more advantageous than boric acid solution. Argyrol should be applied twice daily followed by an oily spray, because un-

pleasant effects are often noted from argyrol when used frequently. After use of the oily spray the child seems to breathe easier, deglutition is less difficult, and the unpleasant effects of argyrol are obviated.

In many cases local applications to the tonsils cannot be satisfactorily made. If the child cries and struggles harm may result from trauma. If the child offers no resistance and local applications can be gently made, no trauma will be inflicted and the result will be beneficial. The greatest nidus of toxemia is the throat and nose, and when these are treated properly, the disease will be mild in character.

In the general management of scarlet fever one of the most important items is to give the child an abundance of fluids. By thus diluting the toxins eliminated through the kidneys we may lessen the chances of secondary nephritis. I always encourage the patient to drink plenty of water and fruit juices during the first few days, hoping in that way to dilute the toxins and cause their elimination before the kidneys have been seriously damaged.

In many cases it is advisable to administer antipyretics in some form,—phenacetin and antipyrin are probably the most useful. The salicylates are helpful in relieving pain and at the same time assist in the elimination of toxins.

As to serum therapy in scarlet fever: I have no doubt the Dicks are working on the right principle. The organism they have isolated seems to meet the postulates of Koch, but they have not yet produced a serum that can be successfully used in all cases. In the severe types I believe some one of the sera should be given, but mild cases are perhaps better treated without sera as these agents now exist. In several instances where I have used sera there were unpleasant after-effects, indeed, the patients suffered more from serum sickness than from the scarlet fever itself. For that reason I have hesitated about using sera except in very severe cases.

The situation in regard to scarlet fever serum is in every way similar to the diphtheria antitoxin question several years ago. I was among the first in Louisville to use diphtheria antitoxin, but it was then a very crude product. Great advances have since been made in the manufacture of antitoxin. It is probable that similar improvements will be made in scarlet fever sera, but I do not believe that that time has yet arrived.

Henry A. Cottell: During my experience of fifty-four years as a medical practitioner I have rarely encountered any difficulty in the clinical diagnosis of scarlet fever. I recall only one case in which it was impossible to determine whether the patient had scarlet fever or measles. In the majority of cases the eruption of scarlet fever is characteristic, but it sometimes closely re-

sembles that of measles, especially when the dermatitis is severe.

In the treatment of scarlet fever I have administered alkalies and salicylates and kept the throat clean. One of the best local applications if the throat happens to be membranous is a mixture of Monsell's solution, carbolic acid and glycerine. Of course if scarlet fever and diphtheria co-exist, the patient should be given diphtheria antitoxin. I have seen cases of scarlet fever which seemed to be combined with diphtheria from the start.

I suppose I saw at one time in consultation with a country doctor three of the most serious cases of scarlet fever ever observed in Jefferson county. One child had had convulsive seizures and was already dead, another was in convulsions and dying, the third was in bed with hyperpyrexia. The country physician asked me to make the diagnosis, and I told him I believed it was scarlet fever; but he said "no it was cerebrospinal meningitis." Of course the child that was dead exhibited no symptoms by which the diagnosis could be made; the child that was in the convulsions had not then reached the eruptive stage and died before the rash appeared; the one in bed with hyperpyrexia developed the classical eruption of scarlet fever the following day, and eventually recovered.

These cases illustrated something I had never before seen, although it had been many times stated in text books and elsewhere, viz., that if convulsions occur in scarlet fever before the eruption appears, the patient is doomed. This proved true in two of the cases I have just related; if the third child had died like the first and second, a diagnosis could not have been made.

James S. Lutz (in closing): As to the question whether scarlet fever has become less virulent during recent years: Such an opinion has been expressed by various observers who have used the serum therapy.

With reference to serum therapy: My observation has been that the discomfort from reaction after the administration of serum is greater than from the moderate form of the disease. Scarlet fever serum is still in the experimental stage.

Dr. Barbour spoke of the difficulty in diagnosis of scarlet fever. It is quite true that some cases occur in which the diagnosis is never made, just as this happens in typhoid fever and certain other diseases. However, I do not believe the diagnosis of scarlet fever entails any difficulty in the average case; the symptoms are quite characteristic and for the most part unlike those of any other disease.

In scarlet fever where there is membrane in the throat, I think it advisable to administer diphtheria antitoxin without waiting for the laboratory report. There is no danger in this, and if diphtheria co-exists, it may be a life-saving measure. The patient may become decidedly worse

while waiting for the laboratory report, and dissolution may occur before antitoxin can then be administered.

James W. Bruce (in closing): Regarding the diagnosis of scarlet fever: I have seen quite a few cases where the diagnosis was uncertain for two or three days. It seems to me that the blanching test is going to be of the greatest assistance in the differential diagnosis of doubtful cases.

I recently saw a child with sore throat, slight fever, an apparently typical rash, and a markedly coated tongue. I could not determine whether it was the so-called strawberry tongue or not; but in any event that is something of little value in my opinion. I thought the child had scarlet fever, but the father said "he had rubbed the child's body with ointment the night before, and that was the cause of the rash." A blanching test was done and was negative for scarlet fever, i. e., the skin did not blanch. Subsequent events proved that it was not scarlet fever but simple tonsillitis.

As to the relative prognosis of scarlet fever in tonsillectomized and non-tonsillectomized patients: It has seemed to me that the presence or absence of tonsils makes considerable difference. The disease appears to assume greater severity and complications are more likely in patients with tonsils than those whose tonsils have been removed.

The administration of scarlet fever antitoxin in mild cases probably does more harm than good, because the serum reactions are more severe than the disease. The value of antitoxin in controlling complications is still a questionable point. Many observers, among them Park, of New York, do not believe antitoxin controls complications to any appreciable extent. Certainly serum reactions are sometimes very severe. I would not advocate serum therapy in any except severe cases.

Secretory Path of Thyroid.—Secretion of thyreoglobulin into blood and lymph has been studied by Hicks in dogs with normal thyroids. It would appear from his results that thyreoglobulin finds its way more by the blood stream than by the lymphatics, the rate of flow in the latter being very slow compared with that of the blood in the veins, and the concentration being of the same order in the two. A conclusion cannot be drawn as to the effect of possible secretory fibers in the sympathetic nerve supply to the thyroid, although it might be urged that the effect might be slower than the nature of the experiment could detect. These results confirm those of Carlson, Heketoen and Schulhof. Administration of iodine appears to increase the flow of lymph from the apical lymphatics of the thyroid gland, as well as to increase the content of thyreoglobulin therein.

THE VALUE OF EXTERNAL EXAMINATION IN CONNECTION WITH GENERAL DISEASES.*

By JESSE H. SIMPSON, M. D., Louisville.

In selecting the foregoing subject for this paper, I was influenced more or less by discussions to which I have listened recently as to whether or not at present the laboratory is being depended upon too much in making our diagnoses: also by the recognition of the fact that the great clinicians of yesterday, with little to aid them except their eyes, ears and fingers, discovered many ocular symptoms which they associated with diseases in general and gave them to us as our heritage. These thoughts prompted me to present for your consideration some of the selfsame symptoms and their association with general disorders, together with other symptoms discovered in more recent years, which may be noted upon examining the eyes, their lids, supereilia, etc.

The general expression of the eyes has long been regarded as an index to health or disease, and is valuable in diagnosis as well as in prognosis.

The eyebrows, that hirsute adornment of the face in general and the eyes in particular, —known in medical parlance as the supereilia, —portray secrets if they be abnormal. Most prominent of these symptoms is alopecia, either partial or total, with the remaining hairs "mussed and seraggy," which is indicative of syphilis.

The eyelids, supplied as they are with sensory fibers from the fifth cranial nerve, are naturally sensitive to touch, heat and pain. Anesthesia of these parts denotes abnormality. If circumscribed, or at least unilateral, the inference is that there exists a peripheral lesion, and if bilateral, that the lesion is central.

Supereiliary and palpebral anesthesia is often seen in herpes zoster, but usually does not occur until after the characteristic eruption has appeared. This is noted in leprosy as well as in tabes. It is sometimes associated with hysteria, and exists in certain fractures of the roof or apex of the orbit.

Echymosis of the lids, if confined to the nasal sides and occurring a few days after injury, is indicative of basal fracture. It has also been known to develop spontaneously in scurvy and typhus fever.

Edema of the eyelids, bilateral in character, has been seen in alveolar abscess, in nephritis following scarlet fever, septic phlebitis or sinus thrombosis (cavernous sinus), chronic nephritis, and the ingestion of ar-

senic.

Blepharospasm is always suggestive. Neurasthenics wink oftener than normal individuals, while those suffering from paralysis agitans and exophthalmic goiter have associated therewith as characteristic features certain intervals of staring, as noted by Rosenbach.

Ptosis of the eyelids, when referable to some general disease, is usually unilateral, and is due to involvement of the nucleus of the third nerve or the tissues immediately surrounding it. In this type syphilis heads the list as a causative factor. Ptosis may appear at any time, even decades after the initial lesion. When due to this cause it is commonly associated with paralysis of some other branch of the third nerve. This phenomenon is also observed in Basedow's disease, acute polio-encephalo-myelitis, cerebral tumors, multiple neuritis, Landry's disease, polymyositis, zona, encephalitis lethargica, simple senility, and in toxemias following diphtheria, ptomaine poisoning, lead poisoning and oxide of carbon, uremia, eruptive fevers and typhoid.

Ptosis of sympathetic origin was first demonstrated by Pourfour de Petit in 1712, and later, in 1859, by Claude Bernard. In their experimentations they demonstrated the relation between the sympathetic and the ocular apparatus, namely: any lesion or affection that involves or causes pressure upon the sympathetic ganglia will produce a certain amount of ptosis of the eyelid. This demonstrated fact has been noted in cervical adenopathies, goiters, esophageal neoplasms, aortic aneurisms, intrathoracic tumors, and mediastinal abscesses.

The inner portion of the lids and the conjunctiva, when dry from hyposecretion of the lacrimal gland, is seen (according to Morax) in poorly nourished children under the age of two years. In adults, xerosis occurring in small plaques, is indicative of primary disease of the liver. A general dryness of the conjunctiva is seen in alcoholism, diabetes, cholera, and typhoid fever.

The globe, its position and tension, is of importance. Deviation from the normal in the form of paralysis of one or more external ocular muscles, is most frequently due to syphilis, but is also noted in puncture wounds and fractures of the orbital apex, in fractures of the base, and in cerebral hemorrhage.

Exophthalmos, due to other than local lesions, as observed in Basedow's disease, may occur from aneurism of the basilar artery and simulate true exophthalmic goiter, but the associated symptoms are those relating to the nerve centers. Cavernous angioma causes a less pronounced exophthalmos, while arterioven-

*Read before the Louisville Medico-Chirurgical Society,

ous aneurism produces marked exophthalmos which is termed "pulsating exophthalmos." An unconscious patient, with soft eyeballs, may give a clue to the cause of this condition, which is characteristic of, and found in, diabetic coma.

The cornea best portrays the general causative factor of its abnormality in interstitial keratitis due to congenital syphilis. Phleotenuar keratitis, while long associated with tubercular taint, yet in my own experience I have seen no case that was not amenable to treatment, if sweets were excluded from the patient's diet.

Unilateral anesthesia of the cornea in moderate coma was noted by Friedman in hemiplegia, and he offers it as a differential point between this and postepileptic states, hypertension and uremia. However, he calls attention to the fact that it is also observed in basal fractures involving the posterior fossa with injury to the trigeminal nerve.

The so-called "doll's eye" phenomenon was described by O. Contelli in 1922, in which there is dissociation between movements of the head and the eyes. This is seen as a sequel to encephalitis lethargica. He states that if the patient is told to look far before him, and the head is strongly flexed upon the chest, the eyes will be seen to remain immobile during the movement.

Observed through the conjunctiva the sclera may appear very blue, and in such cases brittle bones are usually associated. Jaundice of the sclera, as commented upon by Friedman-Smith (Boston M. & S. Jour., May, 1926) may suggest common duct obstruction or infection, hepatic sclerosis, cholelithiasis, pancreatic carcinoma, or catarrhal jaundice. Attention is called to the fact that acute yellow atrophy is frequently not acute in its onset, and this may be an early symptom: also that a diagnosis of hemolytic jaundice may be suggested and confirmed by an enlarged spleen and liver and increased fragility of the red blood cells.

The pupil, so easily seen through a clear cornea, is most significant as a symptom of disease when abnormal. There are two features to be borne in mind: (1) that the normal pupil in infancy is contracted, that in youth and adolescence it is large, and that in old age it is again contracted; (2) that normally the pupils are equal, and as a rule any change from this indicates disease.

G. H. Hopkins has made a summary of conditions which influence the pupil which I believe well worth repeating, namely: that the pupil, its size, shape, inequality etc., may be influenced by:

- (1) Light and shade,
- (2) Sensory stimuli,

(3) Certain drugs either locally or internally,

(4) Emotional states,

(5) Sleep, coma, death,

(6) Local disease of the eye,

(7) Disease of the central nervous system,

(8) Various other conditions of the body.

A dilated and partially fixed pupil, either alone or associated with paralysis of some muscle of the eye, is usually due to syphilis. The best known sign of abnormality is a contracted pupil which reacts to accommodation but not to light stimuli, i. e., the Argyll-Robertson pupil.

Dereum in speaking of inequality of the pupils gives it as his opinion that one of the earliest phenomena observed in paresis is an inequality of the pupils, and further states that in the early stages of this disease a difference in the response to light between the right and the left is the rule. In paresis the response to convergence and accommodation may be retained for some time after light response has vanished, but ultimately this reaction is lost and in that respect it differs from tabes.

The pupil in cerebral neoplasms is influenced by the location of the growth. It has been noted that if the tumor is in the frontal region or above the tentorium there may be no change, but if below the tentorium and in particular above the base,—because of its influence upon the oculomotor nerve,—there will be a dilated fixed pupil on the side involved. This has also been observed in severe injuries of the skull with intracranial hemorrhage.

The pupillary changes following diphtheria are, binocular dilated pupils which are sluggish to light stimulus.

In tuberculosis of the lung, especially involving the apex, the pupil of the affected side is sometimes found enlarged. This has been explained in that it may be due to pressure upon the sympathetic by enlarged bronchial glands. A similar condition has been noted in aneurism of the aorta and usually involves the left side.

The so-called "see-saw" pupil, where first one pupil and then the other dilates, is seen in general paralysis, in isolated cases of multiple sclerosis, chronic cervical myelitis, and infantile cervical paralysis.

Bilateral paralysis referable to the oculomotor nerve is seen in botulism or ptomaine poisoning, and generally appears several days after ingestion of the offending food.

Bilateral mydriasis is frequently seen in sinus thrombosis, cerebral abscess, and meningitis. It may follow myosis. Mydriasis has been noted in general anemia.

Myosis is seen in poisoning from morphine, nicotine, chloral, and urea. Thus in profound coma a contracted instead of a dilated pupil might suggest morphine or opium poisoning.

Drs. Wolfner and Wiener, several years ago, described the phenomenon of a large pupil which reacts to light stimulus but just as quickly returns to its former state, and connected it with cases of arteriosclerosis with hypertension.

There are no doubt many valuable signs which I have failed to enumerate, but I trust the discussion will supply them. In closing I would summarize the visual signs of abnormality of the eye and its surrounding parts in disease as:

- (1) The general expression,
- (2) Any loss or disarrangement of remaining hairs of the eyebrows,
- (3) Unilateral anesthesia, edema, ecchymosis, blepharospasm, or lack of same, and ptosis of the lids.
- (4) Dryness of the conjunctiva,
- (5) Anesthesia, infiltration and ulceration of the cornea.
- (6) Deviation or protrusion of the globe,
- (7) Contraction, dilatation, fixation or inequality of the pupil.

DISCUSSION

Adolph O. Pfingst: I have been very much interested in everything the essayist has said. This is quite a large subject. You will recall that last year I presented a paper on the pupil alone in connection with general diseases. We are all accustomed to inspecting the eye ball and conjunctiva in certain constitutional affections. The early appearance of jaundice over the sclera before other evidences of icterus presented themselves is not uncommon. The same is true of a slight chemosis of the conjunctiva appearing early in Bright's disease before other symptoms present themselves. Of all the external ocular conditions there is none more valuable than the study of the ocular muscles. Of course the ophthalmoscope is of greatest service as an aid to diagnosis as far as the eye is concerned, but if one is limited to external examination of the eye I think study of the ocular muscles is of most value.

We are all familiar with the fact that in encephalitis lethargica there is no constant syndrome of clinical symptoms that we can say belong to this disease. In this disease particularly study of the ocular muscles is helpful to the internist in fixing the diagnosis. Such patients often consult the oculist before they see the internist on account of involvement of the ocular muscles and the associated diplopia as this is frequently one of the earliest symptoms of the disease. It is interesting to note that in encephalitis lethargica we have involvement of the adductor muscle coincident with the levator

palpebrarum. This is contrary to what happens in syphilis, where usually one or several of the branches of the third nerve is involved and the trochlearis and abductor muscles are not involved. This is quite an interesting point. We have the abductor most frequently involved in encephalitis lethargica, then the oculomotor and rarely the trochlearis. Ptosis is frequently one of the earlier symptoms of this disease, owing to easy paralysis of the levator. As in encephalitis lethargica the oculist is frequently the first to see the cases of lues which have ocular disturbance. In syphilis the muscle most frequently involved is the motor oculi, although the levator palpebrarum is also frequently involved. About 60 percent of the cases of paralysis of the ocular muscle are due to syphilis.

I wish to stress the question of exophthalmos. As we know exophthalmos is quite difficult to diagnose at times, especially the cases of bilateral exophthalmos which entail considerable difficulty in early diagnosis because there is nothing by which to make a comparative estimate. In unilateral exophthalmos there is less difficulty because we have the other eye for comparison. In these cases which may be due to pathology within the orbit of the affected side it is not always easy to determine whether the proptosis is due to Basedow's disease or to some lesion in the orbit behind the eyeball.

As an illustration: A few years ago I saw a young woman who had very pronounced rapidly forming exophthalmos on one side. The other eye seemed to be normal. This woman had no tachycardia or shortness of breath and the metabolic test revealed no other evidences of Basedow's disease. She had the most pronounced unilateral exophthalmos I ever saw; several times the globe protruded beyond the confines of the eyelids, a "paratosis as it were, and had to be replaced by manipulation. Some months later another basal metabolic test was made and it was found she had a toxic goiter, although she and never shown any evidence of enlargement of the thyroid. She was operated upon following which there was wonderful recession of the eye.

In the cases of slight bilateral exophthalmos in goitre which are difficult of diagnosis the so-called Von Graefe sign is an aid to the diagnosis. When a normal individual looks downward the lids follow the eyes, but in exophthalmic conditions the lids do not follow, giving the patient a staring expression and exposing the sclera. This is the Von Graefe sign and is frequently present in exophthalmic goitre. Another symptom of some importance is a marked decrease in the frequency of winking or "batting" the eyes. This is known as Stellway's sign. Both of these signs may be present very early in toxic goitres.

Nystagmus is quite an important external ocu-

lar sign in disease. We find it frequently in disseminated sclerosis, also in brain lesions, more especially when the cerebellum is involved. It is often difficult to determine the exact site of the lesion in the central nervous system that is producing nystagmus.

Another point I would like to stress is the importance of the Argyll-Robertson pupil. This is noted in a very high percentage of cases of locomotor ataxia, more than 75 percent, and probably the percentage would be very much higher if we were to include those cases with sluggish, slowly reacting pupils. When the pupils finally fail entirely to respond to light and response to accommodation remains we have the typical Argyll-Robertson pupil.

A condition not so rare is a paralysis of the intrinsic ocular muscles which is known as ophthalmoplegia interna. This is usually unilateral and comes on in young men and girls. It is characterized by a large pupil, irresponsive to light and accommodation and a loss of the power of accommodation. Syphilographers are wont to look upon these cases as of leptic origin of the congenital type. In perhaps six cases of the kind that I have seen none gave a history of a leptic infection—all had negative Wassermann and none responded to any kind of treatment. Quite frequently we see young persons—I have seen it mostly in young men, never in young women—who from birth have had one wide pupil.

W. E. Gardner: I was especially interested in what the essayist said with reference to involvement of the third nerve. This is of great importance in connection with lesions of the central nervous system. A lesion about the nucleus of the third nerve, especially if all the fibers of the nerve are involved, usually produces rather typical third nerve paralysis, ptosis of the eyelid, dilatation of pupil and external strabismus.

The character of pupil which he mentioned in paresis is also important. It is quite true that the pupil in paresis is much likely to be irregular in outline than in tabes. In tabes we have the Argyll-Robertson pupil, either sluggish to light or giving no response, and yet symmetrical and regular in outline; whereas in paresis we find the pupil irregular in outline, sluggish to light, but responds to accommodation.

An inequality of the pupils is also an important sign with reference to involvement of the cervical sympathetic center of the central nervous system, as denoting trouble in the cervical region, lung, mediastinal space, etc. Inequality of the pupils, produced by pressure on the cervical sympathetic center of the central nervous system, is often seen in tuberculosis. Stimulation of the cervical sympathetic produces widening of the palpebral fissure with dilatation of the pupil; whereas paralysis of this center produces just the opposite effect. Sometimes we are able

to detect paralysis of the cervical sympathetic by pinching the lateral aspect of the neck. If the nerve is paralyzed we get no response as indicated by dilation of the pupil. Also the absence of sweating on one side is indicative of paralysis.

The study of external ocular diseases is of great help in general diagnosis, as well as study of the internal ocular diseases as stated in a paper read by Dr. Pfingst not long ago.

REPORT OF A CASE OF GRANULOMA FUNGOIDES WITH A BRIEF RESUME OF THE DISEASE.*

By JOSEPH C. BELL, M. D., Louisville.

Granuloma fungoides—also commonly termed mycosis fungoides—is a chronic malignant disease, of which there are two distinct types: one having prefungoid manifestations followed by the fungoid stage, and a second type where the prefungoid period is almost entirely or entirely absent, and in which the first manifestation is the appearance of fungoid tumors.

In the first type the initial evidence of the disease is the appearance of a reddish scaling eczema-like lesion on some part of the body. This may undergo spontaneous involution, but it is soon followed by similar lesions. These generally spread until they may involve the greater part of the body surface. This stage may last for a few weeks or for years.

There then follows the second stage during which the lesions become indurated, elevated, and their surfaces rough, furrowed, and dark reddish in color. The duration of this period is variable. It is followed by the third stage.

In this stage tumors appear. They may vary from the size of a pea to that of a hen's egg, or may be larger. Soon their surfaces begin to ulcerate and to exude serum and purulent material. The tumors then present a mushroom-like appearance, and the typical clinical picture of the disease is seen. These tumors increase in size and number and the patient gradually wastes away or dies of an intercurrent infection.

The course of the disease may be long, lasting as many as fifteen years, or it may be very brief, extending over only a few months.

Pruritus is almost always present in all stages, and during the first two stages may be the only symptom, the patient being singularly free from constitutional manifestations other than this.

The etiology of granuloma fungoides is unknown. It bears no known relationship to

*Case reported and patient exhibited before the Jefferson County Medical Society.

syphilis or to tuberculosis, and there is no evidence of a hereditary tendency or of its being contagious.

The pathology of the disease is a much disputed question. Cases clinically typical of this condition have shown metastatic lesions in all parts of the body which were characteristic of those seen in lymphosarcoma. A few cases have shown a blood picture typical of lymphatic leukemia; but in the majority the blood picture has been normal or a leucocytosis has been present, with a predominance of the polymorphonuclear cells. The lesions of the skin usually show a thinning or destruction of the epidermis and a dense round cell infiltration of the corium. Stellwagen and many other students of this disease consider it a type of granuloma. Others believe it to be a form of lymphosarcoma.

The diagnosis in the fungoid stage offers no great difficulty to one familiar with the disease; but during the first and second stages the diagnosis may be very difficult or at times impossible. It is frequently diagnosed eczema, psoriasis, etc.

Various forms of treatment have been used, including arsenic, salves, arsphenamin, etc. MacKee says that the roentgen-ray and radium are now recognized as the most efficacious measures at our disposal. No permanent cures have been reported following this form of treatment, but in a number of cases the disease has been kept under control and the patient essentially symptom-free for several years, one as long as fifteen. However, in all cases a time comes when the tumors reappear and the roentgen-ray will no longer cause their involution; when they increase in number and size and the patient gradually wastes away and dies.

MacKee advises treating small areas with fractional doses, as death has occurred from what appeared to be a toxemia resulting from very rapid involution of the lesions. Two cases of permanent cure following the administration of arsenic have been reported.

The following is the report of a case referred to us by Dr. R. Hayes Davis: R. T., a colored houseman, aged fifty years, came to us complaining of pruritus and ulcerated tumors on various parts of the body surface. His past history was essentially negative, except for gonorrhea when a young man. He denied luetic infection. Two and a half years before coming to us, he developed a small, reddish, scaling area on his left shoulder accompanied by intense pruritus. Similar areas gradually appeared on all parts of his body. Involution occurred at times, only to be followed by similar and more extensive areas of involvement. He was seen by several physicians, and various treatments given with no

noticeable change in his condition. The blood Wassermann reaction was negative upon repeated examination. However, he was given antiluetic treatment without any appreciable change in his condition.

During the past year he noticed that the lesions were becoming elevated and indurated. Pruritus continued to be the principle symptom, but a very annoying one. He lost no weight and felt quite well otherwise.

A cardiac lesion had existed for some time and he consulted Dr. R. Hayes Davis for treatment. Dr. Davis referred him to Dr. C. Brooks Willmott for diagnosis of his skin condition. Dr. Willmott made the diagnosis of "mycosis fungoides" (granuloma fungoides). He was then referred to us for treatment.

Physical examination showed a middleaged colored male with large, confluent, indurated, reddish plaques involving the greatest part of the body surface. These were separated by small areas of normal skin. There was an area above his left eyebrow, another on his left thigh, and one on his right arm, which was nodular, and where the surfaces showed a tendency to ulcerate. The surfaces of the plaques were sealy and furrowed. A leucocyte count showed 16,200; the polymorphonuclear percentage was 65.

He was given two roentgen-ray treatments, using 60 kilovolts, 5 milliamperes, at twelve inch distance with no filter, for one minute over each of four areas on his back. Because of his heart condition further treatment was not permissible for one month. Upon his return, the lesions treated showed marked reduction in size, and a distinct line of demarcation could be seen between the treated and untreated areas. In the untreated portions numerous distinct tumors had developed and in places ulceration was present. He was then given three series of treatments, covering only four areas every second day.

Involution of the lesions was rapid, the pruritus ceased, and the patient's general condition improved. Much of the skin regained its normal appearance. Large ulcerated plaques on the lateral aspect of each knee completely disappeared, and he was able to return to work. He has been given only two short treatments during the past month, and now shows a large ulcerated plaque on the dorsum of his left foot, also several small areas where the lesions are returning.

Apparently he was entering the third stage of the disease when he came to us, and while there is little hope of effecting a cure, it may be possible to control the disease for some time.

DISCUSSION

R. Hayes Davis: The patient exhibited by Dr. Bell was referred to me by his employer several

months ago. I understand he had then been treated for the cutaneous lesions by various methods for two or three years. On account of the skin affection I referred him to Dr. C. B. Willmott who confirmed the diagnosis of mycosis fungoides. It was decided that roentgen-ray therapy would be advantageous, and the patient was then sent to Dr. Bell for treatment, since which time the skin lesions have markedly improved. When I first saw the man almost the entire body surface was involved and he complained of intense itching.

It is interesting to note that when this patient first came to me there was decided evidence of myocarditis with cardiac dilatation. There was considerable edema of the feet, and it was necessary to keep him in bed for several weeks. Under rest treatment and the administration of digitalis he improved, but with the least exercise in the standing position the edema returned. His cardiac condition was difficult to control, but was finally accomplished under rest and digitalis to the extent that he was able to return to Dr. Bell for continuation of the roentgen-ray treatment.

It is also interesting to note that after roentgen-ray therapy was resumed, and the skin lesions improved, the cardiac condition showed the most remarkable improvement. The man has now returned to his work and is getting along satisfactorily. So long as the skin remained extensively involved the cardiac condition was difficult to control, which may suggest some relationship between the toxemia from the skin lesions and the myocarditis which existed.

C. Brooks Willmott: I first saw the patient before us about a year ago and made the diagnosis of mycosis fungoides. Dr. W. J. Young also examined the patient and concurred in the diagnosis. There were then numerous cutaneous lesions involving various parts of the body surface. The largest lesion was on the left leg and this had ulcerated; it was the size of a half orange,—a typical fungoid tumor of the mushroom type. I made several applications of the roentgen-ray, but the ulcerated lesion responded slowly. I then sent the patient to Dr. Young who used radium after which the fungous tumor quickly disappeared leaving only a small scar. It is a fact, however, that lesions of this type sometimes undergo a similar stage of evolution without any treatment whatsoever.

The patient was informed as to the nature of his disease, and the prediction made that he would live not longer than five years. I am glad to see that he has improved so markedly under roentgen-ray therapy instituted by Dr. Bell. There is no doubt that the roentgen-ray accomplishes much good in these cases by relieving the pruritus which is so intense that the individuals can scarcely sleep at night. While itch-

ing is constantly present, it is much worse at night.

Mycosis fungoides is characterized by three rather definite stages: (a) the stage of erythema, (b) the stage of infiltration, and (c) the stage of tumor formation. It is not uncommon for lesions of all three types to be present at the same time.

So far as I am aware no method of treatment yet devised will effect a permanent cure of mycosis fungoides. However, two or three cures have been reported during the last twenty years where the disease coexisted with some other chronic affection. Fifteen years is the maximum time the majority of patients have survived after the development of mycosis fungoides. In many instances death has occurred within five years.

It would be interesting if Dr. Bell would make a further report as to the condition of his patient six months or a year from the present time.

Joseph C. Bell (in closing): I fully agree with what Dr. Willmott has said in regard to the curability of mycosis fungoides. It is essentially a chronic affection, and few permanent cures have been reported.

This patient was merely presented to show the remarkable improvement that has occurred under roentgen-ray treatment. The cutaneous lesions have disappeared leaving areas of pigmentation at their former sites, and the annoying pruritus has entirely subsided.

Dr. Davis has outlined the cardiac condition which existed when the patient applied to him for relief, and the method of treatment employed. The man has no edema of the feet at present and is able to work.

Under the circumstances we feel that something worth while has been accomplished in this case, and I shall be glad to make a further report later.

Ambard's Remarks on Paulesco's Statements.—Ambard analyzes two statements made by Paulesco, which he calls Paulesco's laws. The first law states that the urinary output is directly proportional to the urea of the blood, the concentration of urea in the urine being constant. The second law states that the output of urea does not depend on the volume of the urine, the concentration of the blood urea remaining constant. Ambard refers to authors in various countries, who confirmed his law—namely that the output of urea increases with the square of the urea concentration of the blood.

THE SURGICAL TREATMENT OF VESICO-VAGINAL FISTULA, A REPORT OF THREE CASES.*

By JOHN W. PRICE, M. D., AND R. GLENN SPURLING, M. D., Louisville.

Probably the most troublesome complications of pregnancy are those in which the anterior or posterior vaginal septa have been ruptured during the process of child-birth. There are probably no more gratifying results in surgery than those in which successful repairs have been possible. Lesions of the anterior vaginal septa, i. e., vesico-vaginal fistula, offer more technical difficulties than those involving posterior vaginal septa. This is probably due to the fact that there is less tissue to work with and because of the always complicating factor of urinary flow. Often a successful repair can be made at the first sitting, but more often perhaps several attempts have to be made before the final result is satisfactory. The following cases are offered as examples of the difficulties incident to the successful surgical treatment of these lesions.

Case I.—This patient is a married American housewife of twenty-eight years, who first entered the hospital March 1, 1923, complaining of loss of bladder control. The family history is negative. Patient gives a past history of having had acute exanthemata during childhood, typhoid fever at the age of fourteen (from which she made a good recovery) and she has had frequent attacks of malaria during her early adult life, which have responded promptly to quinine treatment. The remainder of the past history is negative.

The present illness started after the birth of her first child in May, 1920. The child was full-term but was born dead. Forceps were used for the delivery. During the delivery, patient sustained a severe laceration, and immediately afterward she had difficulty in retaining her urine and has been "wet" constantly for the three years prior to her admission to the hospital. She had used various devices for the control of this condition, but with no relief. She had no operative treatment prior to her entrance to this hospital.

The physical examination shows the patient to be obese. Nothing of importance was found in the routine examination except for a second degree laceration of the perineum, bilateral laceration of the cervix and a rent in the anterior vaginal septum about 1 cm. in diameter. Urine was expelled through this opening continually.

The first attempt at repair was made on the sixth day in the hospital when the fistula was closed by separating the various layers of the vaginal septum and repairing those layers with No. 2 chromic cat-gut. An in-dwelling catheter was left in the urethra for several days; on the thirteenth day following the operation, seeping of urine was again noted, although the defect in the bladder was of much smaller size than before the operation. She was discharged on the fourteenth day following the operation, somewhat improved.

She returned to the hospital for observation one month later, when examination showed only slight improvement of the original condition. Further operative treatment was apparently refused at that time.

The next admission to the hospital was Dec. 15, 1926, at which time she complained of considerable pain in her lower abdomen and incontinence of urine. Physical examination on this admission was essentially the same as on first entrance to the hospital. The fistulous tract was perhaps 2 to 3 mm. in length, located midway between the urinary meatus and the tip of the cervix. Urine is discharged through this opening continually. On her sixth day in the hospital the second attempt was made to repair the fistula. Under ether anesthesia, a transverse incision was made across the anterior portion of the cervix and the vaginal wall and carried toward the fistulous tract. The vaginal mucosa was dissected free around the fistulous tract and the tract excised well into the bladder. The sinus tract was inverted with a double row of interrupted silk sutures. The flap of vaginal mucosa was sutured into position over the old opening of fistula, with No. 2 chromic cat-gut. At this time a trachelorrhaphy was performed. An in-dwelling catheter was placed in the urethra; this catheter was allowed to remain in place for five days and was then withdrawn and patient catheterized every eight hours. On the thirteenth day following the operation the fistula again broke down and she was again discharging urine involuntarily. Examination of the repair showed a very small opening, extending into the bladder, just large enough to insert a fine probe. Patient was discharged to return to the hospital after three or four weeks, for another attempt at repair of the fistula.

She re-entered the hospital on Jan. 25, 1926, and was operated on Feb. 2, 1926, under sacral and trans-sacral anesthesia. No general anesthesia was required and patient expressed no discomfort throughout the procedure. The bladder was dissected from the vaginal mucosa around the fistula and the anterior part of the cervix. The fistulous tract was thoroughly cauterized by heating a very small

*Read before the Jefferson County Medical Society.

probe and searing the edges of the tract well into the bladder. A purse-string suture was first placed around the tract then two layers of chromic-cat-gut sutures were taken in the bladder wall. The vaginal mucosa was imbricated over the fistulous tract with the same suture material. An in-dwelling catheter was placed in the urethra and left in place for two weeks. Vaginal douches were given after the sixth day. The bladder was irrigated with boric acid solution twice daily.

Patient had a smooth convalescence, and no difficulties were experienced by leaving the catheter in place. On the fourteenth day the catheter was removed and patient allowed to void spontaneously. She left the hospital on the eighteenth day following the operation apparently completely cured. Examination before her discharge showed the repair to be strong and there was no evidence of urinary incontinence. Patient reported to the hospital for observation one month following her discharge. She has been completely relieved and has had no difficulty whatever with her bladder control. Vaginal examination shows the repair to be strong and well healed. There is no evidence of urinary incontinence. She states that this is the first time in six years that she has been free of this troublesome symptom.

Case II. Patient is a married colored woman of thirty-seven years, who entered the hospital March 16, 1926, complaining of inability to retain her urine. Family and past history are irrelevant.

Present illness started about two years ago, following child-birth. She was delivered of a dead full-term baby after a long difficult labor, due, she states, to a contracted pelvis. Following this delivery she has been unable to control her urine. She has worn a pad day and night for the past two years and has had no urinary continence whatsoever.

The physical examination is negative except for obesity and the vaginal findings. There is a constricting band partially occluding the vagina at its mid-portion on the anterior wall of the vagina. In the mid-portion of the constricting band there is a urinary fistula about 2 mm. in diameter, through which a probe can easily be passed into the bladder. Urine flows from the fistula continually. Laboratory findings are negative.

On the seventh day in the hospital patient was operated upon. Attempt was made to secure regional anesthesia by the sacral novocain block, but this was unsuccessful because of the obesity of the patient. A light gas-oxygen anesthesia was given. A transverse incision through the fistulous tract was made. The bladder was separated from the vaginal wall by blunt dissection both anteriorly and

posteriorly to the fistula. Posteriorly the bladder was dissected free from the anterior lip of the cervix, thus affording an abundance of tissue to close over the fistulous tract. Scar tissue was met with everywhere; hence, the definition of two distinct layers was very difficult but finally accomplished. The fistulous tract was thoroughly eauterized with the actual cautery and a purse-string suture of silk taken around the tract. The walls of the bladder were closed over the fistulous opening by a series of mattress sutures of silk then the vaginal mucosa was imbricated over the defect by a series of silk sutures. An in-dwelling catheter was inserted. Patient made an uneventful convalescence. Catheter was left in place for two weeks and the bladder was irrigated daily with boric solution. She was kept in bed for twenty days following the operation. On the fifteenth day she began to void spontaneously and did not leak urine at any time during her stay in the hospital following the operation. At the time of discharge the fistulous tract was well healed and nothing but a puckered scar remained to mark its former site. One month following discharge from the hospital, she reported for observation and was found to be completely relieved of symptoms.

Discussion: These two cases serve to illustrate the difficulties attending surgical treatment of vesico-vaginal fistula. The two unsuccessful attempts to repair in case I were probably not wasted, some progress was made each time the repair was attempted. Whether or not either of the first attempts would have been successful with the technique used at the last operation, is problematical.

There are two points in our operative technique to which we wish to call attention. Perhaps neither of them is new, but we do not believe that they are in general use.

First: The greatest difficulty experienced in most of these repairs is securing enough tissue with which to work and be able to repair the fistulous opening without creating too much tension on the suture line. This we think is best accomplished by freeing the bladder from the anterior lip of the cervix as well as from the mucous membrane of the anterior vaginal wall.

Second: Searing the fistulous tract with the actual cautery seems to be a rational procedure. The walls of a fistulous tract between the bladder and vagina are always lined with epithelium. Unless the epithelium is thoroughly destroyed, healing of the approximated edges will not occur. In the classical Sim's operation, the epithelium is removed by blunt dissection, but this involves the creating of a much larger opening than by simple searing of the epithelium with the

cautery. Very moderate cauterization is advisable for if too much heat is applied the surrounding tissues will be devitalized by the excessive heat. We have used a very fine probe, heating in a flame for this purpose, rather than an electric cautery.

The important point in the after-treatment is to put the bladder at rest. This can only be done by an in-dwelling catheter. Constant care must be exercised to keep the catheter functioning properly. We have seen no difficulty with in-dwelling catheters provided they are properly cared for. If one depends upon repeated catheterizations instead of the in-dwelling catheter, two important points are missed, i. e., first, the bladder is not kept at rest, and second, the possibility of creating a urinary infection is greatly increased.

Since observation of the foregoing cases, one other patient with vesico-vaginal fistula has been treated in the city hospital, and Dr. Spurling will describe the condition found:

Case III. (By Dr. Spurling) The third case was clinically quite similar to case one. The only important differences were: that practically the entire anterior vaginal septum was involved, the fistula being about the size of a man's thumb, and the amount of scar tissue present was far greater. I might say, in addition, that the patient had a vesical calculus which could be felt by palpation through the vaginal fistula.

Dr. C. W. Hibbitt made a vaginal and cystoscopic examination under general anesthesia, there being so much tenderness that a satisfactory investigation was otherwise impossible. He identified the vesical calculus, which was the size of the distal phalanx of the thumb. This was later extracted through the fistulous opening by Dr. Owsley Grant.

The vesico-vaginal fistula was repaired two weeks ago by the type of operation just described. An in-dwelling catheter was introduced and remained in situ for five days. The patient then decided "it did not belong there" and proceeded to remove it, after which she began to urinate spontaneously. She refused at first to permit reinsertion of the catheter, and on the seventh day urinary leakage through the fistula was again noticed. We then reintroduced the catheter which remained until today when it was removed.

There undoubtedly still exists a small fistulous opening, although the patient passes 100 c.c. of urine at a time through the normal channel. A secondary operation will be necessary to effect a complete cure.

DISCUSSIONS.

J. Garland Sherrill: We have often heard the statement that Marion Sims was a great surgeon because he devised a procedure by which vesico-vaginal fistula could be successfully closed. Any

man who can perform this operation properly and successfully deserves great credit. It is always difficult and every case of vesico-vaginal fistula is a law to itself. Sometimes an attempt at closure renders the condition worse by making the opening larger than it was before. More frequently, however, the opening is made smaller, and one or two operations, as in the case reported by Dr. Price, will secure a beneficial result.

There are two or three important factors which must be remembered if proper healing is to result: First, to get the bladder clean and keep it so by frequent irrigations with argyrol or mecurochrome. Second, dissection must be made carefully so that no tissue is sacrificed, because all the tissue present is valuable in the process of repair. Dr. Price prefers the method of cauterizing the vesical mucosa and secures healing of the edges of the opening. Others like the older method of incision and report perfect healing. It is important to dissect the bladder freely from the vaginal wall. This is accomplished by elevating the parts and separating the vagina from both the bladder and the underlying fascia. The vesical mucosa should be sutured without tension if possible, because tension destroys the sutures or causes them to cut through the tissues and a good result is therefore not obtained. A line of sutures should be placed in the fascia below the bladder. The next step is to close the vaginal mucosa. A catheter may be left in the bladder almost indefinitely by careful management and with the co-operation of the patient.

The successful repair of vesico-vaginal fistula requires painstaking care with clean and careful surgery. Patients have come to me, and doubtless also to others, with a history of twenty and even twenty-eight operations without beneficial results, each time the opening being made larger perhaps than it was before. It is difficult surgery and requires great care and correct technique if success is to be attained.

John W. Price (in closing): I am sorry Dr. Louis Frank did not remain to discuss my report, because I want to give him credit for the method of dissecting the bladder from the cervix, the method that we now use exclusively. He and I saw a patient with vesico-cervical fistula ten years ago. In that case the fistula was between the bladder and the cervix, and we discussed the method of approach before operating. Dr. Frank thought exposure by transverse incision, dissecting the bladder from the cervix would be the ideal method. That plan was followed and the patient was successfully operated upon; the opening in the bladder and also the opening in the cervix were closed and she made an uninterrupted recovery. I have not seen this method described in the text books. They still advise the classical Sims' procedure. And I

do not recall seeing this particular type of incision mentioned in any of the medical journals. I do not know whether Dr. Frank ever reported the case I have mentioned. I have been using the method for at least ten years,—I think it was fully ten years ago that Dr. Frank and I operated first according to this plan. Every year we have one or two patients with vesico-vaginal fistula in our service at the city hospital, and I have repeatedly used the technique described. Sometimes we have had to operate twice, as we did in one of the cases reported tonight, but very frequently we get primary closure.

SEPTICEMIA COMPLICATING ACUTE BILATERAL MASTOIDITIS.*

By A. L. BASS, M. D., Louisville.

Baby McQuady, aged 18 months, was first seen by me January 11, 1926, with the following history: Child had fever for one week or more prior to Jan. 3, 1926. Both ear drums had been incised by Dr. Frank Pirkey. At 8 a. m., Jan. 3rd, Dr. Pirkey operated right mastoid, that evening 8 p. m. temperature went to 105.4 and Dr. Pirkey operated left mastoid at 11 P. M. Next morning, 4 A. M. temperature was 98.6, that evening 12 P. M. temperature rose to 105 again. Child was then given 3 cc. mercurochrome 1% solution intravenously. Temperature ranged from 100.2 at 8 A. M. to 105 at 8 P. M. Jan. 6th, temperature ranged from 98.6 at 8 A. M. to 102.2 in the evening. Jan. 7th, temperature ranged from 100, 12 noon to 104 at 8 P. M. when child was given 5 cc. 1% solution mercurochrome intravenously. Blood culture taken at 9 P. M. Jan. 7th was negative after 60 hours. Culture and smear made from mastoid wounds. Smear was negative for organisms but culture showed gram positive cocci in clusters,—staphylococcus aureus. Jan. 8th, temperature ranged from 98.6 in A. M. to 103 P. M. Jan. 9th, temperature 98.6 to 101. Jan. 10th, at 4 A. M. temperature was 103.8, and 101.2 at 4 P. M. Jan. 11th, temperature was 100.6 at 8 A. M., rising to 105 at 8 P. M., this being the afternoon of the day I saw the case. Dr. Barbour saw the child the same day.

On examination, both mastoid wounds were found well ventilated and antra draining good. The right drum had a perforation but pus was dammed behind it indicated by the bulging. It was incised, and I advised dressing wound twice daily and watch for 24 to 48 hours. The next day the mother became dissatisfied with the Hospital and took the child home.

I did not see the baby again until Jan.

20th, but had frequent conversations with Dr. Pirkey relative to its progress. The child kept running the intermittent daily temperature and I could not see anything other than a blood stream infection. I told Dr. Pirkey the child couldn't last very long the way she was going, that we had better take the wound that wasn't healing so well tie off the internal jugular and open the lateral sinus, that we couldn't do any harm and might do some good. I asked that another physician see the case and Dr. Dabney saw the baby and advised operation with only a short delay. On the 20th the temperature rose to 105 and Dr. Pirkey had the child sent back to the hospital for immediate operation.

The blood count was:

Blood count was:

(1-20-26)

Urinalysis was:

Hgb.	70%	Color	Straw
R. B. C.	2,830,000	Reaction	Acid
W. B. C.	23,000	Sp. G. Spec.	not suff.
Polys.	78%	Albumin	Negative
L. Mono	7%	Sugar	Probable trace
S. Mono	15%	Acetone	Negative
		Diacetic	Negative
		Microscopic	Neg.

The left mastoid wound had practically healed while the right had made little progress toward healing.

Operation: The right internal jugular vein was tied off below and above the facial vein and excised. The mastoid wound was re-opened and lateral sinus exposed down to jugular bulb. Blood was taken from sinus for culture. Sinus was opened, no clot found; sinus immediately compressed with iodoform gauze plugs; mastoid cavity, which was large enough for a child 10 years old, was packed and dressing applied. The child was given 200 c.c. normal saline under the breast on the operating table. The next afternoon Dr. E. S. Allen gave 200 c.c. of the father's blood intraperitoneally.

Blood culture from lateral sinus showed no organism after six days growth. The child's temperature at 8 P. M. was 99.8; the 21st it ranged from 98.6 to 100.2; 22nd, 98 to 101.8; 23rd, 98.6 to 100; 24th, 98.6 to 99; 25th, 98 to 99; 26th, 99 to 102; 27th, 99 to 99.8; 28th, 98.6 to 99.2. From then on temperature remained normal, the child leaving the hospital on Jan. 30th, ten days after operation.

The elevations of temperature after operation (internal jugular resection) seemed to be due to intestinal disturbance, for every time she would have a little temperature she would be constipated and immediately upon relieving same, the temperature would decline. The wound was dressed on the fourth day. The sinus was not obliterated and was immediately packed again to be dressed four

*Read before the Jefferson County Medical Society.

days later when there was no further trouble.

DISCUSSIONS.

Samuel G. Dabney I want to congratulate Dr. Bass on the brilliant operation which he performed and the excellent recovery of the patient. He saved the child's life; he did a beautiful piece of surgical work.

Personally, I am going to express a little different opinion in regard to the pathology. I did not see the operation Dr. Bass performed, however, and for that reason his opinion is of far more value than mine. I wish he would tell us in closing whether the conditions present did not suggest to him that there might have been a thrombus in the jugular bulb. The fact that there was return of bleeding from below does not disprove the theory of jugular thrombosis. It often happens that blood appears in the wound from the inferior petrosal sinus or there may be a mural thrombus, only partially occluding the vein.

When I saw the child there was little room for doubt in my mind as to the diagnosis. Considering the gross picture, the fact that bilateral mastoidectomy had been performed, that one mastoid wound was not healing as rapidly as the other, there was only one thing to be done, viz., to ligate the internal jugular vein and open the lateral sinus. Tying the jugular in my judgment was the most important step. There was quite a difference in the two mastoid wounds, the right did not look as well as the left.

This is the third case I have seen where bilateral mastoidectomy was followed by thrombosis. In the other two cases thrombi were found in the lateral sinus proper.

The history shows that infection had existed for quite a long time in this case. Infection in these cases of bulb thrombosis does not come from the mastoid, it is directly from the floor of the tympanum above into the jugular,—that was the picture presented in this case.

I believe Dr. Bass ligated the internal jugular vein himself. I want to congratulate him on that, too, because it seems to me the custom of most aurists here is to call a general surgeon to perform this operation.

James S. Lutz: This case was very interesting to me. Of course the child owes its life to Dr. Bass, there is no question about that. The case was a "puzzler" from the beginning. The child became ill on December 5th, and I was called to see it that day. It was one of the most typical cases of pneumonia that I have ever seen; moist rales, temperature 104 degrees F., respirations 50, pulse 135. I told the family that it was a plain case of pneumonia. The next day the child had a normal temperature, was bright, and eating well. I did not know just what had happened. The following day, however, the symptoms returned and were present for two or three days, the rales persisted, and

the child undoubtedly had pneumonic involvement. During the succeeding weeks, as stated by Dr. Bass, the temperature varied from slightly above normal to 105.6 degrees F. Throughout the latter part of December I thought the child had influenza. When evidence of ear involvement appeared Dr. Frank Pirkey was asked to see the patient. Dr. P. F. Barbour always told us when the lymphatic gland just back of the sterno cleido mastoid muscle became enlarged to always look for pus in the ears. That proved true in this case. Both ears were involved and later a bilateral mastoidectomy was performed by Dr. Pirkey. Mercurochrome was administered two or three times. The first time we thought some benefit resulted, but no effect was noted from later administrations. I am of the opinion that nothing was accomplished by the use of mercurochrome in this case.

After the child returned to the hospital, the internal jugular was ligated and the lateral sinus opened, as Dr. Bass has told us. The temperature soon receded to normal and the child recovered although convalescence was rather tardy. Since then she has had a series of furuncles five or six of which I have incised and drained at various times. Staphylococcus vaccine was given, but whether or not any good was thereby accomplished I do not know. I noticed tonight that the child has one small furuncle on the shoulder, the first one that has appeared for several weeks.

This patient certainly owes her life to Dr. Bass. I do not believe anyone could have performed the operation of ligating the internal jugular any more skillfully than he did. Dr. Allen began the blood transfusion into the jugular vein, but the needle became obstructed and the blood was then introduced into the peritoneal cavity. There was little reaction and I believe the peritoneal method did just as much good as intravenous transfusion.

Phillip F. Barbour: I had the opportunity of seeing this very interesting case. One mastoid had been opened the day I saw the patient, and I understand the other mastoid was operated upon the same night. The child was in a desperate condition and I was unable to throw very much light on the case, excepting that the temperature range made us suspicious of blood stream infection.

Ordinarily sinus thrombosis is accompanied by rather severe chills along with fever. In this case my recollection is that on only a few occasions did the child have a chill. I believe a definite chill followed by high fever (103 to 105 degrees F.) is rather characteristic of these cases. Children of that age, however, do not usually have definite chills even in malarial attacks.

I discussed with Dr. Lutz the question of administering mercurochrome or gentian violet to

try and overcome the blood stream infection, but my own opinion was that neither of these agents would prove very serviceable. I did not believe mercurochrome "would reach the spot" in sufficient concentration to be of any benefit. Of course the presence of a focus of infection in the jugular vein or other location would entirely prevent mercurochrome or any other intravenous medication from being efficacious until the focus was removed.

Dr. Bass did a beautiful piece of work in locating the focus of infection, and the method of treatment he pursued undoubtedly saved the life of the patient.

Claude T. Wolfe: This patient undoubtedly had typical blood stream infection. In my experience of nine cases I feel sure that the symptoms are such as to make the diagnosis rather easy, and especially is this true as the disease progresses. If the patient gives a history of ear or mastoid infection as this one did, a morning normal temperature followed by a chill and a rise of temperature to 104-105 degrees F., a decline the next morning to normal with a feeling of well-being on part of the patient, if this is repeated day after day it cannot be anything else but blood stream infection. Of course it is advisable to carefully examine the patient to exclude pulmonary, renal and cardiac disease, etc., but there cannot be any question about the diagnosis especially when the patient gives a clear history of infection as in the case reported.

About a year ago Dr. Dabney saw with me a man who gave the history of a discharging ear for thirty-five years. His symptoms were almost identical with those in the case Dr. Bass has described. The mastoid was opened and later he suddenly developed temperature of 105 degrees F. preceded by a chill. There was no question at that time of the existence of blood stream infection. After four or five days, however, his condition of well-being was such that he was disinclined to have further operative work done. Finally he began to lose weight rapidly and it was evident something must be done to save his life. The jugular vein was ligated, the lateral sinus opened, and a large blood clot removed. The patient made an uninterrupted recovery.

These cases when operated upon early offer a favorable prognosis, but in many instances the patient procrastinates until the infection has extended to other structures, particularly the joints, and the prognosis then becomes distinctly unfavorable.

I wish to congratulate Dr. Bass on the splendid result obtained in the case he has reported.

A. L. Bass (in closing): I want to thank the gentlemen for their liberal discussion.

Relative to the location of the blood clot, I made no attempt to locate it; but, was satisfied that there was an involvement in the lateral

sinus or the jugular bulb; and the trouble was on the right side because the right mastoid wound had made little progress toward healing while the left had practically healed. The lateral sinus in the infant is like the mastoid antrum, that is, about as large at birth as it ever is. I think the reason blood cultures were negative was that the blood was not withdrawn until after mercurochrome had been administered.

MENIERE'S DISEASE: CASE REPORT.*

By M. C. BAKER, Louisville.

This paper is meant primarily as a case report; but as Meniere's disease or Meniere's syndrome is such a rare condition, a brief description of its main characteristics will be given.

In 1861, Meniere, a French physician, described an affection characterized by vertigo, tinnitus and nausea and vomiting due to a lesion of derangement of the semicircular canals and the cochlea on one side. A progressive loss of hearing either accompanies or precedes the condition. The attacks may be short or long, mild or severe, frequent or infrequent.

The paroxysm, or labyrinth storm, may be abrupt or the symptoms may take an hour to reach their height. It usually begins with a low pitched tinnitus or buzzing and roaring in the ear, then comes a slight vertigo, quickly becoming severe. The vertigo gradually passes off and the patient becomes pale and nauseated, a clammy sweat appears on the face and severe vomiting may follow. After reaching their height the symptoms slowly decline in the reverse order of their appearance. Along with the vertigo the patient is usually sensible of a subjective movement of external objects, and if the eyes are examined during the attack they will be found to exhibit spontaneous vestibular nystagmus usually directed to the opposite side from the labyrinth affected.

The vertigo of Meniere's disease is distressing in the extreme, is unlike any other vertigo and will be described by the patient to the point of exaetitude. The cause for a particular case of Meniere's disease is difficult or almost impossible to determine.

Some of the moderate cases may be caused by wax in the meatus or some middle ear infection that would give rise to a temporary increase in the perilymph and intra-labyrinthine pressure.

The severe forms may be caused by hemorrhage in the labyrinth, by organic changes in the auditory nerves such as in tumors and

*Read before the Jefferson County Medical Society,

syphilis, by progressive inflammatory disease of the labyrinth, by high or low blood pressure and by toxemia.

CASE REPORT.

Sister Mary B., a sister of mercy of this city, fifty-five years of age, came for examination in May, 1924. She gave a history of progressive deafness and slight tinnitus in the left ear for the previous eight years. For the previous five years she had had a vertigo that progressively grew worse. For the previous two years she complained of a double wave of sound; in other words, she would hear a sound twice or double. This was very disturbing. Her extreme attacks of vertigo began in January, 1924. The second attack followed the first one in a week. After that they came on irregularly. Sometimes once a week, sometimes three times a week. They grew more and more severe and finally came nearly every day. She had to give up her work as a teacher. Toward the last, the attack would continue about an hour or until she vomited everything in the stomach, and then she would lie in a sleep of exhaustion for three hours like one dead. After the sleep she would get up and feel fairly normal again.

The paroxysm would often come on abruptly with no warning. She would feel herself reeling and staggering and objects around her would be doing the same thing. She would often fall.

If she were lying down she would have the sensation of the bed sinking away from her or tilting on edge, and in a few minutes she would have to fall out on the floor.

Examination showed the left ear drum normal except slightly fibrous. The ear could not hear a watch tick, was deaf to the high pitched tuning forks, and the bone conduction was almost nil.

The nose, throat and teeth seemed to be negative, and looking for a possible cause she was sent to Doctor Morris Flexner for gall bladder drainage by mouth. This was done on July 11, 1924. 465 cc. of bile was recovered showing one pus cell to the H. P. F. Cultures showed colon bacillus. An autogenous vaccine was made but never given.

She improved in feeling at once, has never had another attack of the labyrinth storm nor the slightest suggestion of it. Patient has been teaching school without missing a day since the fall of 1924. She was called over the 'phone yesterday and claims she has never felt better. A rather remarkable feature is that her hearing in the affected ear has so improved that she can hear a watch ticking about one-half inch from the ear. She still has a slight tinnitus but she claims that it is lessening and she feels that her hearing is still improving.

DISCUSSIONS.

Morris Flexner: To me the case reported by Dr. Baker was very interesting and unusual. I think it is the only one of the kind I have ever seen in practice. There may be some question whether this case should be classed as Meniere's syndrome or as true Meniere's disease. The symptoms in these cases are very distressing at times. The vertigo in this case was intense during an attack, and on two or three occasions the patient fell suddenly as happens in true Meniere's disease. I thought there was probably some gastrointestinal derangement, as she had some digestive symptoms, such as sick headache, etc., and therefore did gall bladder drainage. I never expected to get the brilliant result that followed. If the patient suffered from toxemia it was promptly relieved by gall bladder drainage. As Dr. Baker has stated we obtained between 400 and 500 cc. of bile which contained a few pus cells. Cultures showed colon bacilli. A vaccine was made but never used. This is the most brilliant result from gall bladder drainage I have ever seen. I consider this a case of toxic labyrinthitis.

Samuel G. Dabney: I enjoyed Dr. Baker's paper and congratulate him on the result obtained in the case reported. Dr. Flexner sounded the keynote in the case I think when he said it was Meniere's syndrome and not true Meniere's disease.

Meniere's disease is rather uncommon. I recall having seen only two or three in my practice. In all those I have seen there was a history that the patient suddenly fell and was unconscious for a time. Vertigo and tinnitus are especially distressing in most of these cases. These symptoms gradually disappear, as do vomiting and nystagmus, but deafness to greater or less degree usually remains.

I think Dr. Baker's patient had what has been correctly described as toxic neuritis, that is a toxemia with infection of the auditory nerve which caused the symptoms. There is an important difference in the prognosis between the two conditions. It is far less favorable in Meniere's disease, which is very rare, than in toxic neuritis producing Meniere's syndrome, which is not so rare.

I wish Dr. Baker or Dr. Flexner would tell us something more about why they happened to drain the gall bladder in this case.

Charles G. Lucas: I would like to ask Dr. Baker about the condition of the patient's intestinal functions in the case reported. I have often drained the gall bladder with good results in cases where similar symptoms were present. I have seen particularly good results from this procedure in cases of severe sick headache. Many observers state that the administration of magnesium sulphate by mouth will do just as well as the introduction of this agent through

the tube as is done in gall bladder drainage, but such has not been my experience. Most of the patients who come for gall bladder drainage have already taken large quantities of magnesium sulphate and other drugs by mouth without beneficial results.

I was very glad to hear Dr. Baker's report. It makes me more convinced than ever that benefit may be derived from gall bladder drainage, particularly in toxic conditions due to infection.

M. C. Baker (in closing): I might mention that in the case reported the patient's first attack occurred after exposure on a bitter cold January day. The onset was very sudden. From that time on the attacks began to occur with increasing frequency.

Dr. Lucas asked about the patient's intestinal functions: She had complained of digestive disturbances at intervals for which the family physician had prescribed laxatives and various other forms of internal medication without improvement; in fact, the patient constantly grew worse. Treatment through the intestinal tract did no good. I treated her for several weeks by repeated inflation of the Eustachian tubes without appreciable benefit.

Answering Dr. Dabney about gall bladder drainage: I have given the gall bladder more or less study during the last three or four years. I believe it has considerable influence in the production of various eye symptoms. We frequently see people with fairly decided jaundice of the sclera and slight ciliary injection. I have had great success in draining the gall bladder in such cases. I believe infections of the gall bladder cause more trouble than we have hitherto thought.

Dr. Dabney mentioned the difference between true Meniere's disease and Menier's syndrome: He is quite correct in his contention that the case reported was one of Meniere's syndrome. He says these cases are not so rare. I think they are, at least cases parallel to the one reported. I recall having seen only one other case in which the symptoms were severe. The case reported was not one of true Meniere's disease, but it was certainly one of severe Meniere's syndrome.

Calmette's Preventive Immunization Against Tuberculosis. — Kraus injected comparatively large amounts (20 mg.) of Calmette's B. C. G culture into the peritoneum of guinea-pigs. After three to four weeks he found in the peritoneum, spleen and other organs nodules containing acid-fast bacilli and resembling true tubercles except for vascularization of the tissue, abundance of leukocytes and absence of caseation. The bacilli could be cultivated from the organs but implantation of these organs did not infect other animals.

THE SURGICAL TREATMENT OF DUODENAL ULCER.*

By M. J. HENRY, M. D., Louisville.

The surgical treatment of peptic ulcer has, within the past few years, become a most fertile field for discussion. The ever changing trend of opinion makes it a most interesting subject, and until the treatment has become more or less standardized the literature will continue to be replete with papers dealing with the various methods of operating for the relief of this very common pathological condition. All surgeons have, through experience and a study of the literature, adopted more or less routine lines of procedure in treating peptic ulcers.

In this day of group medicine and large clinics, with the vast amount of clinical material at their disposal, the field of original observation is closed to the observer not enjoying a connection with some such organization. Consequently what I have to say will be based upon the current literature influenced by observation of a relatively small number of cases. The personal experience of any surgeon working independently must of necessity be small in comparison with the combined experience of men working in large clinics, and it is usually of relatively small importance in the moulding of opinions on the subject.

To my mind the study of peptic ulcer is one of the most fascinating in the whole field of medicine. The many theories advanced as to its etiology; the various methods of diagnosing it; the ever present controversy as to whether it should be treated surgically or not; and when surgically treated, what mechanical measures are to be followed, permit it to hold the interest of all who are students of the diseases of the gastro-intestinal tract.

The list of etiological factors assigned to peptic ulcer is a large one, and many of them are of too technical a nature to be easily grasped by a surgeon unfamiliar with research work. For instance, it is difficult to appreciate the workings of the sympathetic nervous system and its influence in producing ulcers of the stomach and duodenum. The outstanding feature in the causation of ulcer is infection, and possibly also hyperacidity. Where does the infection come from? is the question uppermost in the mind of the student of this condition. Dr. John B. Deaver thinks that in eighty per cent of the cases it comes from the appendix, the other twenty percent from other foci, chiefly in the mouth and facial sinuses.

In the opinion of the writer, the work of

*Read before the Jefferson County Medical Society,

Rosenow can not be lightly passed over. In his work on the selective localization of streptococci, he has explained the formation of peptic ulcer as being due to the hematogenous invasion of the submucosa by streptococci. After having so frequently found streptococci in the depths of ulcers excised at operation, and having produced peptic ulcers in laboratory animals by the intravenous injection of cultures of these streptococci, he concludes that "these facts constitute good evidence that streptococci are not merely accidental or secondary invaders of the tissue, but are commonly the original cause as well as an important factor preventing the healing of the ulcer." The constant recommendation of most writers on the subject of peptic ulcer in regard to the elimination of foci of infection attests their belief in this factor in the production of ulcer. Anyone who has seen Rosenow's work in this and other fields of research will not fall into the error of attributing his views to over-enthusiasm on the subject of the selective localization of bacteria. The writer believes that the judgment of time will be favorable to Rosenow's theories that streptococci have a decided influence on the production of ulcer.

The degree of acidity present in the stomach has an indefinite place in the production of symptoms of ulcer. The variability in the amount of free hydrochloric acid found in proven cases of peptic ulcer only tends to complicate the study of the condition. Analyses of hundreds of cases of ulcer by the statisticians of some of the larger clinics show that ulcer does at times exist in the presence of a very low acidity, which is contrary to a rather widely held view that a more or less constant finding is an hyperacidity. Fractional estimation of the gastric acidity has shown such a varying acidity over a two hour period, that acid estimations based on a single aspiration of the stomach contents are of little value in the study of ulcer.

Practically all surgical and medical procedures in the treatment of this condition take into consideration the infective element and the acidity of the stomach contents, endeavoring to eliminate the former and control the latter. The foremost teachers of the surgery of peptic ulcer now, more than ever, are directing their attention to these features.

Though the symptoms and pathology of ulcers proximal to the pylorus are more varied than in duodenal ulcer, yet the surgical treatment is more standardized. This was not the case a few years ago when the majority of surgeons were treating duodenal ulcer by gastro-enterostomy; the only disturbing element to their serenity being the advocates of pyloroplasty. Recently, however, the consideration

of the role of gastric secretion in peptic ulcer and its complications has initiated a new controversy among gastric surgeons.

For many years the Mayo Clinic has advocated the performance of a posterior-gastro-enterostomy in cases of duodenal ulcer, leaving but a small percentage of cases to be treated by the so-called plastic methods. In hundreds of cases they have been satisfied with their results, so much so that they have been slow to change to other methods which have gained prominence in the past few years. Other investigators have not reported as happy results from this operation, and have been searching for a more satisfactory method of eliminating the symptoms of the disease, and the sequelae of many operations in which a gastro-enterostomy was done.

As a gastro-enterostomy is more easily performed by the average surgeon, and the limitations to its field of usefulness less narrow, it was more frequently performed than any of the plastic operations which required a more keen appreciation of duodenal pathology and made more demands upon the technical skill of the operator.

Surgeons now in dealing with duodenal ulcer must choose one of the three operations: pyloroplasty, gastro-enterostomy, and subtotal gastrectomy.

Pyloroplasty, except in the opinion of a few, has but a very limited field of applicability. Its use is practically confined to ulcer of the anterior wall of the duodenum, which are not accomplished by much induration, or by attachment to the surrounding tissues. Finney, in 1902, was the first American surgeon to advocate this operation, though in 1886 the European surgeons, Heineke and Mikulicz, working independently described an operation of similar principle. When indicated, the plastic operations on the pylorus have the advantage of being easily performed, leaving the stomach and duodenum in their normal relation, and attended by fewer post-operative complications. In fact, several writers in advocating this operation state that one potent argument in its favor is that if it does not relieve the patient it has done him no harm, and should the ulcer symptoms persist a secondary operation can be easily performed. The secondary operation most frequently performed is a posterior gastro-enterostomy with or without occlusion of the pylorus. The advocates of pyloroplasty argue that secondary operations are much less difficult when a plastic operation has been done than when a posterior gastro-enterostomy has been performed.

The second, and most discussed type of operation is the gastro-enterostomy. The very ease of its performance, its suitability to a

display of surgical gymnastics, and a too meager knowledge of its indications on the part of its employers have proven its greatest drawbacks. Since this operation was popularized by Moynihan and the Mayos many surgeons of varying degrees of experience, judgment, and technical dexterity have employed this operation, oftentimes when a thorough knowledge of its indications would have prevented its use and the consequent failure of the patient to experience the expected improvement. The operation is not 100 percent perfect, and like all other measures directed to the relief of human suffering or disability must be employed intelligently to procure for it a just position in the surgical armamentarium. Until very recently the leading surgical minds of the world were its advocates, but accumulating failures have turned many of these minds into other surgical courses. Despite a widespread distrust of its efficiency it still has several champions of no mean ability.

The Mayo Clinic which has for years been one of the greatest users and advocates of this type of operation is still its firm defender, though many able men have forsaken it and joined the ranks of those advocating a more radical course. The objections raised to gastro-enterostomy in the treatment of duodenal ulcer are that it does not remove the ulcer, and it does not eliminate the secretion of a large amount of acid by the stomach. As infection and acidity are the outstanding factors in the development of ulcer and continuance of symptoms from ulcer, these two objections have a modicum of justification. While but very few now believe that an hyperacidity has any causative influence in duodenal ulcer it is nevertheless a frequent finding in this condition and any treatment directed toward the alleviation of ulcer symptoms must not disregard this factor. It would seem logical, also, to seriously consider the failure of gastro-enterostomy to remove the offending ulcer. The most important manifestations of duodenal ulcer are pain, hemorrhage, and vomiting, and any operation which relieves or minimizes these symptoms can be classed as a successful one.

To my mind the most convincing contribution to the literature on gastro-enterostomy was made by Balfour at the 1924 meeting of the American Medical Association. He analyzed one thousand cases of duodenal ulcer treated by gastro-enterostomy ten or more years ago. Surely the lapse of ten or more years is ample time for the development of unsatisfactory results. Nine hundred and eighty-six of Balfour's one thousand cases had complained of pain prior to operation. Following operation ninety reported a return

of pain to some degree; but twenty-two considered it important enough to return for examination. Vomiting was a symptom in six hundred and eleven cases before operation; following operation there was a recurrence in twenty-five cases. Hemorrhage had occurred in two hundred and eighty-six cases before operation; reported recurrences fifty-seven, as bleeding following operation is usually ascribed to either the retained ulcer or to the stoma, this is a post operative hemorrhage percentage of 5.7. A consideration of the end results in Balfour's one thousand cases shows that the patient was relieved of the symptoms for which he sought relief in 88 per cent of the cases. Balfour reminds his readers that these figures are based upon operations done ten or more years ago, before the surgical profession fully realized the necessity of eliminating all foci of infection, and the placing the patient upon a strict dietary regimen. It is easily conceivable that had these patients been treated for focal infections and placed under the care of a competent internist for six months or so following the operation, an even more satisfactory report could have been made. The operative mortality in a group of 1610 cases done during the period reported by Balfour was 1.11%, as low as, or lower than the operative mortality usually attending operations in the upper abdomen.

Not all surgical clinics have been as well satisfied with the results of gastro-enterostomy as has been the Mayo Clinic, as the literature of the past three or four years clearly attests.

The operation now receiving much consideration by American surgeons after the visit of Finisterer to the chief clinics of this country, is that of subtotal gastrectomy. Its growing popularity can be suspected when one is aware that now, Moynihan, in England, and Crile, Deaver and Strauss in this country, consider it the operation of choice in the majority of duodenal ulcers. They recommend it because in the majority of cases the duodenal pathology can be excised, and the removal of the acid bearing portion of the stomach prevents the recurrence of spasm about the stomach and prevents the formation of stomal or jejunal secondary ulcerations.

Finisterer of Vienna, a few years ago, came to this country and visited many clinics, demonstrating his technique, and the publication of his reports of over four hundred cases treated by this method has evidently greatly influenced American surgeons. Finisterer recommends the resection of the ulcer-bearing portion of the duodenum, provided it be not too near the papilla of Vater, and with it as much as two-thirds or three-fourths of

the stomach. He is not satisfied with a removal of the pylorus and antrum only. Most of his operations were done under morphine and novocaine anesthesia. In the three and one-half years prior to the publication of his report in April 1923 he performed 158 subtotal gastrectomies with three deaths; an excellent record for any operation in the upper abdomen.

The operation is too new in America to give us any worth while statistics from our own clinics, and time alone will tell what the future will decide concerning this apparently radical procedure. In the absence of statistics, the only concrete means we have of evaluating any treatment instituted for the relief of symptoms anywhere in the body, the advocacy of this operation by men of the calibre of Deaver and Crile is sufficient to stimulate our interest.

The writer would be very reluctant to advocate such a radical procedure as an initial operation in the relief of the symptoms of duodenal ulcer, even though he is deeply conscious of the occasional unsatisfactory results following gastro-enterostomy. In view of the known results from the less radical operation, it seems advisable for the occasional operator upon lesions of this portion of the digestive tract, to await the reports of the clinics now doing a relatively large number of subtotal gastrectomies. The pendulum might then swing back to the less mutilating operations. The wide divergence of opinions as to how peptic ulcers should be treated shows clearly that no one operation is universally applicable. The only features upon which there is an unanimity of opinion are that all foci of infection should be removed and that the patient should have at least six months postoperative guidance, preferably by a competent internist, to attain the maximum benefit from an operation. As to the technical features of the operation itself it would be well to remember Pope's advice, "Be not the first by whom the new is tried Nor yet the last to lay the old aside."

DISCUSSIONS.

M. Casper: The subject of duodenal ulcer is a live one at all times. Nothing was said in the paper about the diagnosis, which I think is the most important part of duodenal ulcer at the present time.

A frequent cause of failure in treatment has heretofore been jejunal ulcer following gastro-enterostomy. This is being largely eliminated by making the anastomosis between two branches of the loop. Many surgeons are claiming this is very successful in preventing the development of jejunal ulcers which formerly followed in these cases. Also since Balfour's statistics appeared even the Mayos have largely abandoned

the use of non-absorbable sutures and are employing to a large extent catgut. This has lessened some of the aggravating after-effects of gastroenterostomy. The operation of subtotal gastrectomy has not yet become popular in this country.

European surgeons have a great many more cases of this kind than we do here. I had the pleasure of seeing Pauchet, in Paris, perform five subtotal gastrectomies during one morning. He is a splendid operator and makes the procedure look very easy indeed. In this same clinic is where Labat developed most of his original work on local anesthesia.

I think Rosenow has practically proved his case, that the cause of duodenal ulcer is streptococcal infection. He has taken streptococci from these ulcers and produced similar ulcers in animals, then from these reproduced ulcers in other animals, thus fulfilling all the requirements of Koch's law. He has done this time and again, so it looks very much like he has proved his case. I think, myself, that focal infection has a great deal to do with it, but we must remember that duodenal ulcer may be due to other causes. I think perhaps Deaver's statistics showing that 80 per cent of duodenal ulcers come from the appendix are rather high. I am inclined to think the tonsils, teeth and paranasal sinuses have about as much to do with it as the appendix. Perhaps the gall bladder is also oftentimes a source of focal infection. We find more and more gall bladders being removed at the time the operation of gastroenterostomy is performed. This, I think, has materially improved the results of the operation. More duodenal ulcers are being excised now than heretofore since it has been shown that we can mobilize the duodenum to a much larger extent than was formerly realized. It is possible to successfully excise practically all ulcers situated on the anterior surface of the duodenum.

I thank Dr. Henry for giving us this splendid paper.

L. Wallace Frank: My personal views are practically in accord with those expressed by the essayist. The time has not yet arrived, nor has our experience extended over sufficient length of time, for us to unhesitatingly recommend the radical operation of partial gastrectomy in the treatment of duodenal ulcer. In the hands of the occasional operator this is a most formidable procedure and the mortality would be infinitely greater than that following gastro-enterostomy. We must take into consideration that the reports from the larger clinics are compiled from the work of experts, and while we must teach the profession the newer advances in surgery, we do not advocate their use by inexperienced or untrained operators.

In the treatment of duodenal ulcer simple excision of the ulcer with or without gastro-en-

terostomy offers us good results. It is true that some clinics report recurrences after operation and the occurrence of marginal or stomal ulcers in a fair proportion of cases. By careful technique and the use of the short loop and the proper placing of the new opening may eliminate some of these complications.

In gastric ulcer one must bear in mind that frequently carcinoma may subsequently develop and in the treatment of this type of peptic we would advise wide excision of the ulcer or gastric resection.

In either case, following the surgical work, there must be careful dietary regulation for months. Furthermore the possible source of infection, which may possibly have been the existing cause of the ulcer, must be eliminated, whether it be tonsils, teeth, gall bladder or appendix.

Charles G. Lucas: As the most of you know I have been especially interested in the subject of gastric and duodenal ulcers for many years. In discussing Dr. Henry's excellent paper I wish first to present an abstract of Dr. Richard Lewishohn's paper to be read at the forthcoming meeting of the American Gastro-Enterological Society. He says: "Late results following gastro-enterostomy for duodenal ulcer, with or without pyloric exclusion were now unsatisfactory. Only 50 percent of the patients were cured and 34 percent had a recurrence of symptoms due to a gastro-jejunal ulcer. Gastro-enterostomy does not effect any decisive reduction in gastric acidity. A recent re-examination of 69 patients who had been gastro-enterostomized for duodenal ulcers 5 to 10 years ago, shows that 3 percent only were anacid (absence of free hydrochloric acid) and that in the vast majority of the patients the preoperative hyperacidity persisted following the gastro-enterostomy. On the other hand, partial or sub-total gastrectomy causes an immediate and permanent absence of free hydrochloric acid in about 80 percent of gastric resections."

As a result of all this work we can readily see there is yet no consensus of opinion upon any phase of the subject. They cannot even agree as to the fate of the ulcers, that a large proportion of them gradually diminish in size until they practically disappear. They may diminish to small size, then at a later date there may be a relapse and the ulcers resume their original size.

One author reports three cases, two of duodenal and one of gastric ulcer, where gastro-enterostomy was performed. All three of the patients came to second operation, when it was found that the original ulcers had healed. All three patients came to third operation when the original ulcers were again found present.

While Dr. Henry did not tell us the cause of duodenal ulcer, he mentioned that we were all

convinced focal infection had a great deal to do with it. I believe Smithies is right in his statement that in dealing with ulcer we are dealing with the local manifestation of a constitutional condition. In ulcer we have increased vascularity of the mucosa, plus infection, plus an increase in hydrochloric acid, and upon these factors depend the type of ulcer present.

Naturally I am interested in the treatment of ulcer. I agree that many duodenal ulcers get well spontaneously. Autopsy statistics from one of the large German hospitals show from eight to thirteen per cent of gastric or duodenal ulcers and the strange fact is that they show just as many healed as open ulcers. Statistics from Leeds Hospital during the last ten years show practically the same thing.

I regret Dr. Louis Frank is not present as I want to mention a case we saw together to prove there must be some constitutional cause of gastric and duodenal ulcer which we do not understand. Many years ago Dr. Frank and myself saw a woman then about thirty-five years of age who had all the evidences of ulcer. Under rest in bed, modified diet, and the administration of alkalies, she apparently recovered. Within two or three months she had a recurrence. This happened quite a number of times. Finally her condition became such that she was removed to the hospital and it was decided an operation should be performed. She was seen in consultation by several Louisville physicians including the late Dr. Ap Morgan Vance. Examination of the urine made in the hospital showed the presence of a large amount of albumin and many casts. These had not been present six days before. The patient was kept in bed and treated by the usual methods then in vogue, and in the course of five weeks was able to leave the city for a long rest. She went to Atlantic City. While there she had another relapse and in response to a telegram I advised her to go to New York and consult Dr. Einhorn. She was treated by duodenal feeding and became very much better. She returned from the east in very good condition. We decided then that if she had any more symptoms we would operate upon her. Two or three weeks afterward she developed more severe symptoms than she had ever experienced previously. She was taken to the hospital and Dr. Frank resected the pylorus. She had eight healed ulcers and five active ulcers. That patient then weighed about eighty pounds. She is living today and weighs one hundred and fifty pounds. She has had no further symptoms. There are many things to be considered in the etiology of duodenal ulcer as well as in the management of these cases. On patient may have a gastric or duodenal ulcer without pain or discomfort; another may have the most intense pain and other symptoms.

Dr. Henry and also Dr. L. W. Frank spoke

of the importance of medical supervision after operation for gastric and duodenal ulcers: I agree with those who believe the patient should be kept under observation for at least six months or a year after the operation, and during that time the diet should be carefully watched and regulated. It is a great mistake to tell the patient that he is perfectly well after gastroenterostomy, that the cause of his discomfort has been removed, and he can safely eat anything he desires. Such patients ought to be kept under continuous observation for the time stated.

I think the most brilliant results seen in gastric surgery have been from gastroenterostomy. I recall one man living in this city who had a very large ulcer on the lesser curvature of the stomach. The middle third of his stomach was resected. He had a rather stormy convalescence, but finally made a satisfactory recovery. Within eighteen months his symptoms returned and he underwent a second operation for ulcer of the pylorus,—this time a gastroenterostomy was performed and the result was wonderful. I see that man every few days and he has no further trouble. In other cases where ulcers were located near the pylorus the results have been just as brilliant after gastroenterostomy. I must say, however, that I have seen cases where gastroenterostomy was performed for duodenal ulcer without any improvement in the patient's symptoms.

M. J. Henry (in closing): I wish to thank the gentlemen for their liberal discussion of my paper. In closing it may be well to emphasize that I am not an advocate of subtotal gastrectomy for the cure of duodenal ulcer, nor did I recommend this procedure in my paper. By resecting three-fourths, two-thirds, or even one-third of the stomach, would mean the removal of the major portion of the acid secreting area. Certainly the secretion of the stomach has a most important function in the human economy. Why deprive the patient of this and produce practically total anacidity when many patients come to us for treatment because of the lack of acid in the stomach? Distressing symptoms are certain to result from the lack of acid.

I am still in favor of gastroenterostomy for relief of duodenal ulcer. The statistics of Balfour cited in the paper testify to the efficiency of this method. It is well to remember, in discussing this subject, that Balfour's statistics, published in 1924, covered one thousand operative cases during the previous ten years. The importance of removing all foci of infection was not then recognized as it is today, and doubtless this had some bearing on the percentages of recovery or relief of symptoms.

Dr. Lucas has mentioned the principal factors concerned in the causation of ulcer as the matter is now understood.

GALL BLADDER VISUALIZATION.*

By H. C. HERRMAN, M. D., Louisville.

The administration of sodium-tetra-iodo-phenolphthalein, to render the gall bladder visible on the roentgenogram, now known as cholecystography, has become increasingly popular as a diagnostic procedure. While the oral method may never be as reliable as intravenous cholecystography, yet its diagnostic accuracy in expert hands has been placed approximately 75% efficient in gall bladder diseases; while the intravenous cholecystography has a 96% efficiency accurate diagnosis is confirmed by operation. The method devised by Graham and Cole, of visualizing the gall bladder, by intravenous or oral administration of the above dye stuff, has proved to be of tremendous advantage in visualizing the gall bladder. The effort of these films is to emphasize the fact that we have a definite diagnostic aid which enables us to reach a much higher percentage of discovered pathology of the gall bladder and also to attempt to show the relationship of the gall bladder visualized with the surrounding anatomy. This diagnostic aid can be classified as a primary evidence of gall bladder disease.

A negative finding of an intravenous gall bladder administration of dye is positive finding with regard to a pathological gall bladder. The roentgenological evidences of a pathological or calculus gall bladder are as follows:

The direct signs or evidences would be:

1. The shadow of stones, opaque, or solid shadow, ring shaped or mosaic shadow. The question of demonstration of calculi is somewhat of doubtful value except teaching that gall stones are visualized by positive or negative findings in about 20 to 30% of the cases.

2. The visualization of the gall bladder is also questionable. It is a fact often proven by operation and autopsy, that the normal gall bladder is often visualized. Notwithstanding this fact, some authorities on the subject claim that a gall bladder which is visualized on a roentgenogram negative, is pathological.

The absence of a gall bladder shadow when the dye is given intravenously, is positive finding of gall bladder pathology.

The secondary or indirect signs are as follows:

1. Pressure effect on the duodenum and pyloric part of the stomach.

2. Traction effect, that is pouching or displacement of the duodenum due to adhesions; displacement of the colon and the fixity of the duodenum and colon.

When pressure deformities are present they are of more diagnostic importance because ex-

*Read before the Jefferson County Medical Society,

perience teaches that this is never produced by a normal gall bladder. This fact is easily explained by the theory that the tension of a barium filled stomach and duodenum is greater than the tension in the normal gall bladder. The reverse is often found in a thickened gall bladder distended with bile or stones. With the dye visualization of the gall bladder in these cases, it will be easier to state with very much more accuracy whether these pressure deformities are caused by a deformed gall bladder, Riedel's lobes, tumors or cysts, and no doubt will find that the gall bladder is not as often responsible for these deformities as was thought to be the case.

If the gall bladder visualization does nothing more than give the size, shape, position and emptying time or the functioning of the gall bladder, it will serve as an important experience in gall bladder diagnosis. As to the functional test of the visualized gall bladder, it has been observed that the normal gall bladder usually requires from 16 to 20 hours to reduce one-half in size, but with the introduction of epsom salts directly into the duodenum of various individuals, the gall bladder was reduced one-half in size within two hours.

In regard to the interpretation in the findings in gall bladder visualization, assuming that the correct technique is taken in each case; the absence of a gall bladder plainly indicates one of three things:

1st. Obstruction of the cystic duct by a stone within it, or in Hartman's pouch, or by fibrosis; or by catarrh or neoplasm.

2nd. Or the gall bladder is so filled with stones that the dye laden bile cannot enter.

3rd. Or that the gall bladder is so diseased and shrunken as to be functionless.

In cases where the preliminary roentgenogram has shown doubtful shadows, suggestive of gall stones, the accurate localization of the gall bladder gives confirmatory evidence. The method being thus comparable to pyelography, as in cases of renal calculus. When a palpable lump is present in the right hypochondriac region, it is possible by cholecystography to determine whether it is a new growth in the liver or a distended gall bladder.

Occasionally, one observes a gall bladder that does not fill with the dye as would a normal gall bladder. This appears to me, that an abnormal gall bladder does not fill with the dye as uniformly as the normal gall bladder, and with those cases in which a preliminary roentgenogram has showed the presence of gall stones, the subsequent dye test would either show a failure of the gall bladder to fill or would reveal a faint and incomplete visualization of the gall bladder. When the gall stones block the cystic duct, the failure of

the gall bladder may be purely mechanical, but in many gall stone cases in which the ducts are not blocked, the failure of the gall bladder to show in the usual way must be attributed to associated diseases of the gall bladder or bile passages. In a few cases where the oral method of administration of the dye was tried and the results were so inferior to those obtained by intravenous method, and the latter was so much more accurate and certain, that the intravenous method in my point of view is the method of choice.

In conclusion, I wish to emphasize the importance of the findings, visualization of the gall bladder with relation to the adjacent organs and to say that no gall bladder examination is complete without examination of the stomach and duodenum because of the filling defects which may be caused by adhesions or pressure from a distended gall bladder. The stomach and duodenum examination, plus the dye examination of the gall bladder, helps markedly to increase the diagnosis of the gall bladder pathology.

DISCUSSIONS.

D. Y. Keith: We have had some experience in gall bladder visualization, and our impression is that the oral administration of the sodiumphthalein preparation is to be preferred because the reaction is much less than following the intravenous method, and there is no injury to the blood cells.

The question has been raised about the capsules not dissolving in the intestinal tract: That depends entirely upon how the dye is given. About a month ago I saw a series of one hundred cases in which sodiumphthalein was given by Stewart, of New York, and in only eight of these was the gall bladder not visualized. Six of these eight patients were operated upon and the gall bladder was found occluded. He used the intraoral method exclusively.

At the present time we are using dye that is marketed in sealed glass ampoules. After the patient arrives the dye is placed in a capsule and administered orally. This plan insures a fresh capsule for each administration. Since using this method we have not had a single instance in which the capsule failed to dissolve in the alimentary tract.

There is no question in the world but the intravenous method gives better visualization of the gall bladder, but the reaction is sometimes rather severe. In other words, the roentgenogram presents a better picture of the gall bladder after the intravenous method because none of the dye is lost. After the oral method the plate may show that half the capsules are not dissolved, still the outlines of the gall bladder may be perfectly seen. Probably only a small percentage of the dye given intraorally reaches the gall bladder, but it is sufficient generally to

give a very good shadow.

From a strictly radiographic point of view the intravenous method is preferable because a better shadow is obtained, but from a clinical standpoint this should not be given too much consideration because of the intense reaction that occurs from intravenous injection.

We have had several cases in which the gall bladder failed to fill even when the dye was administered intravenously. Operation later in these cases showed occlusion of the cystic duct. We have had no greater percentage of accurate diagnoses by the intravenous method than by intraoral administrations.

We had four cases last week in which the dye was given intraorally. In three of them the gall bladder failed to fill, and it was in these that operation revealed occlusion of the cystic duct.

In the other case the diagnosis of gall bladder disease was made by a genito-urinary surgeon. The internist and general surgeon thought the patient had kidney involvement, because there was a tumor low in the abdomen. Following the administration of sodiumphthalein the patient had four or five alvine evacuations, that is diarrhea was produced by the dye. The gall bladder was perfectly visualized. She was given a fatty meal and one hour later the gall bladder was completely empty. The patient was operated upon and it was found she had an abscess which came from the appendix. I merely mention this case to show the value of sodiumphthalein as a diagnostic agent. I think it represents a distinct advance so far as gall bladder diagnosis is concerned.

My impression at the present time, and I think it is the impression of a great many men of national reputation, is that the intraoral method of administering the dye will sometimes fail but should be used in preference to the intravenous method simply because we do not get the marked general reaction that comes from the intravenous method.

Virgil E. Simpson: The profession welcomes anything that will advance the diagnosis of disease of the gall bladder. It has always been a difficult matter to evaluate the symptoms and to determine the degree of involvement, if any, of the gall bladder, and with the advent of a reasonably satisfactory method of visualization by means of roentgen-ray study and the dye mentioned by Dr. Herrmann, we have advanced our position considerably with reference to this particular group of diseases.

One of the things that has been of interest to me in the study of gall bladder conditions and the appearance in the gall bladder of dyes, has been the action of the gall bladder with reference to its emptying time after the administration of some agency, either a fatty meal or the administration of a solution such as magnesium sulphate. As you know there has been a con-

siderable war of words going on in the literature of the past three or four years brought about as a consequence of Lyon's efforts to determine the presence or absence of disease of the gall bladder by means of what is known as transduodenal drainage based on Meltzer's original observation. Some clinicians still contend that the gall bladder is uninfluenced by any such effort, that drainage of the gall bladder is purely a matter of state of mind on part of the clinician; but when one can visualize the gall bladder that has been filled with bile containing dye, make a series of pictures, and then administers a solution of fatty meal and sees the rapidity with which it diminishes in size, it seems to me there is hardly any question that we have an agency of considerable importance in gall bladder diagnosis.

Another point of interest pertaining to this question is the ease with which the gall bladder is visualized under certain circumstances with the ordinary technique. We have come to the conclusion that any gall bladder which can be seen under the ordinary technique, with the Bucky diaphragm, etc., is not a normal gall bladder. We have let that become axiomatic in guiding us with reference to not only our clinical procedures with our own patients but with reference to our therapeutic advice in cases seen in consultation. It is a well known fact that calculi in the gall bladder are not visualized to a satisfactory percentage by means of the ordinary roentgen-ray technique. The use of dyes may or may not enable us to determine that gall stones are present. Even if the dye enters the gall bladder the calculi may not be visualized then but the percentage of positive findings is higher with the dye.

As to the choice of methods of administration of the dyes: There is no question that the intravenous method is the one of choice from the standpoint of x-ray reading, hence the method of choice from the standpoint of diagnostic effort. It is true, on the other hand, that the intravenous administration of the sodium salt or any of the preparations that have been used, the object being the same in all, produces in an unsatisfactorily large percentage of cases symptoms of discomfort to the patient. Some of these symptoms are rather severe. There has been no fatality reported. How much damage is inflicted upon the hepatic cell structure remains also a question to determine in the future.

If we could devise means that would permit of satisfactory disintegration and absorption of dyes when administered orally, I think there could be no question or difference of opinion among clinicians and roentgenologists as to which method should be universally adopted, because it is true that the oral method of administration presents far less likelihood of disturb-

ances and distress to the patient than the intravenous method.

There are at present two methods ordinarily resorted to for the purpose of coating the dye for oral administration: One is coating it with salol, which as you know does not dissolve in the stomach ordinarily, but passes into the intestinal tract with its alkaline medium and is there dissolved but always with more or less variation as to time. As can be seen in any series of observation some of the capsules do not dissolve, yet they may have been freshly made. The other method ordinarily adopted is to use keratin coated pills. That perhaps is the better method, because keratin dissolves more readily in an alkaline medium than does salol.

The manufacturing pharmacists of this country have been singularly backward in the manufacture of high class pharmaceuticals. The English excel all other countries in that respect. Some of the most beautiful pharmaceutical preparations I have ever seen were made by one particular English concern. The American manufacturing houses have never been able to approach in solubility, appearance and accuracy of dosage the agents made by this particular English concern.

If we could get our dye coated with something that would dissolve fairly rapidly and fairly certainly, I think we would all be of one accord regarding the oral method of administration being the one of choice. Since that does not obtain it must follow that the method which will certainly carry enough dye, in the dosage you have determined as being desirable, through the hepatic structures and permit the gall bladder an opportunity at least of being visualized, must remain the method of choice. The dosage that one uses and the time that elapses from administration to the time of complete filling and the completeness with which the gall bladder does fill, constitute in large measure the yard stick from a diagnostic standpoint. To whatever extent one cuts down the degree with reference to the time or absorption or minimizes the chance of absorption of the dosage as determined upon, just to that extent must he cut off his yard stick.

Lipoids in the Contents of a Gallbladder Containing a Calculus.—Bergeret and Dumont describe a case of gallstone, in which the gallbladder contents presented the aspect of mucopus. The fluid proved to be free from bacteria. There was diffuse sclerosis of the organ and a superficial ulcer in the fundus. At the site of the ulcer, the connective tissue was infiltrated with macrophages containing liquid corpuscles. The cell reaction was manifest not only in the mucosa and submucosa, but also in the epithelium. It could not be established whether the ulcer or the calculus was primary.

REPORT OF CASE OF FATAL HEMORRHAGE FROM STOMACH AND BOWELS FOLLOWING AN APPENDECTOMY.*

By A. DAVID WILLMOTH, M. D., Louisville.

In the report of this case, and the study of hemorrhage from the stomach following operations, no reference is meant to those cases where from faulty suturing, in making an attachment to the duodenum or jejunum, bleeding follows in the next few hours. Post-operative hæmatemesis follows far more frequently upon operations involving the opening of the abdomen than all other operations combined. It is true, however, that fatal hemorrhage from the stomach has followed operations done on the urinary bladder, urethra, head and even the extremities.

In the majority of cases the hæmatemesis follows within the next twenty-four hours after the operation. The blood has as a rule remained in the stomach a sufficient length of time to be partly digested, and is of course when vomited black in color. It does not necessarily follow in those patients having nausea and vomiting after the anesthesia, and in such cases there is in most all an interval between the time of such sickness and the vomiting of the blood.

The quantity is not as a rule large, seldom being more than four or five ounces, and is intensely acid. The general appearance of the patient is one of collapse. The facial expression is anxious, pulse rapid, and small. Skin cold and clammy. Like many cases of hemorrhage, the mental alertness is remarkable, until the patient becomes exhausted. During my surgical career I have seen five cases of hæmatemesis following operations on some part of the abdominal contents.

Three cases followed appendectomy, one case where the gall bladder had been drained, and one following myomectomy for the removal of a small fibroid from the uterus. The first four cases, while alarming, all recovered, but the fifth case which is here reported proved fatal within twelve to fourteen hours after the onset of symptoms.

CAUSES.

In a study of the causes, it is interesting to note that for some time the anesthetic was assigned as the causative factor, until some cases were reported where local anesthesia was used.

Second it was thought that rough handling of the walls of the stomach was followed by ulceration, hence the bleeding. To this, Kroulein has shown that ulceration could not take place for several days, so that thought had to be abandoned.

*Read before the Jefferson County Medical Society.

Thirdly Von Eiselsberg came forward with the suggestion that the rough handling of the omentum, by producing a thrombus in its vessels, would explain the cause, since they lie at right angles to one another, a piece of clot being swept off and finding its way to the epiploica causing finally an ulcer, with its bleeding.

In the first volume of Moynihan's "Abdominal Surgery" which was published in 1905, in discussing the probable causes of post operative hæmatemesis, he believed it most likely due to a reflex nervous influence.

In the same volume he gives a former Louisville surgeon credit for the suggestion that it might be due to some form of sepsis, this suggestion coming from the late Dr. W. L. Rodman of Philadelphia, who was present when Dr. Moynihan discussed this very important subject. To this idea Purves dissented, believing if it did influence the condition it was an irritation by the infection that brought about the reflex nervous influence.

In the more recent work of Moynihan (in two volumes) while discussing the above causes, adds the study of 24 fatal cases in the London Hospital following operations of various kinds on the abdominal viscera. Of these 21 cases were acute appendicitis with septic complications, localized abscess, or diffuse peritonitis. In the remaining three cases, ulcers were found in the stomach in two, and in the duodenum in one. As early as 1902 Purves in a report of 29 cases (Edin. Med. Jour., March, 1902) placed the mortality at 69%, and states that other writers place it at about the same. Moynihan dissents from this and says it is lower, but fails to state what he thought it should be.

In 1917 Eusterman called attention to hemorrhage in connection with acute appendicitis, and said that about 2% of those having well-marked gastric symptoms, would show stomach hemorrhage in their history at some time. The thought is suggested that the septic foci may be in the liver, and the blood going from this organ causes erosions of the gastric mucosa. In the case under discussion, due to the long continued septic process, which kept repeating itself, and further the fact that the streptococcus was the prevailing organism, makes it likely that both the liver and spleen may have been involved, if not foci of infection, at least gastro-toxic, from disturbed chemistry.

REPORT OF CASE.

Patient, white, male, age 26, married, farmer by occupation, seen in consultation with his family physician on October 24th 1925 at St. Anthony's Hospital, where he was admitted two hours previously by suffering with what had been diagnosed as acute appendicitis.

The family history was negative except that one cousin developed insanity following an attack of typhoid fever. There was no tuberculosis or any of the so-called hereditary diseases that could be recalled.

Patient's personal history was as follows: He had the usual diseases of childhood. Had influenza some years ago, and during the year 1916, had an attack of what was called acute articular rheumatism and was unable to move any of the joints for about six months. Some few weeks previous to this attack had acute tonsillitis which lasted for several days, but made a complete recovery as far as he was able to judge.

The present illness began the previous day (October 23rd) with severe pains in the right side of lower abdomen. Pains radiated to the region of the stomach and into the shoulder of the same side. These pains would last for something like thirty minutes then gradually subside, and again renew themselves. He would be more or less relaxed during the interval of pain.

At time of admission, pulse was 120, temperature 101, and respirations 22. Tongue was dry and carried a heavy coat. Abdomen very tender on right side over McBurney's point, with muscles rigid, and pain produced at this site by pressure anywhere over the abdomen.

Blood count showed an increase of leucocytes to 14,060; a differential was not made. The urinary examination was negative as to blood, pus, casts, albumin, and sugar.

The original diagnosis of acute appendicitis was confirmed and operation advised, which was accepted, and patient given a preliminary hypodermic of morphine 1-6, atropine 1-150. The field of operation being prepared, the patient was taken to the operating room at 3:40, the operation was started at 3:50, and ended and 4:05.

The appendix was found very much inflamed, but not ruptured. The area surrounding the appendix was covered with lymph, as was also a portion of the appendix. A small amount of thin sero-pus was seemingly localized surrounding the offending organ. This was removed by gentle swabbing with gauze, and painted with 2 1-2 per cent iodine. One cigarette drain was left in the wound, the remaining portion being closed by the tier method of sutures, reinforced by silk-worm gut relaxation stitches.

When patient left the operating table his pulse was 124; when he began to arouse his pulse went to 160 but was of fair volume. Skin was covered with free perspiration, but was warm, and color good.

Proctoclysis of glucose and soda bicarbonate was started and ordered continued. Mor-

phine in one sixth to one-fourth grain was ordered to be given at the discretion of the nurse to keep patient quiet. The Fowler position was prescribed, and only one ounce of hot water by mouth was ordered every thirty minutes during the night.

At half past nine that night pulse was 124, temperature in axilla was 100° F., respirations 24. Patient passed a comfortable night and was apparently in good condition next day, with pulse, temperature and respirations about the same as above.

On October 25th patient's condition was much improved, and bowels moved from the proctoeclysis. Temperature 101° F., pulse 118, respirations 20. On October 26th patient was allowed water, and symptoms had subsided to the normal point. Wound was frequently dressed as there was a free pus discharge. The wound looked well and patient continued to improve until the 18th day of his stay in the hospital, and was told that he could think of returning home, and to notify his family to come for him.

In the afternoon of this day (the 18th in the hospital), and after he had complained of some burning sensation on urination for the previous twenty-four hours, he complained of being nauseated and shortly thereafter vomited a large amount of bilious fluid, and temperature rose to 104° F., and pulse to 140, respiration to 26. He was given calomel 3 grains and followed with milk of magnesia the next morning.

After twenty-four hours the temperature still being high and the incision becoming tender, the scar was "teased" open, as it by this time had entirely closed. No pus was found at time of opening the incision, but on November 14th, two days later, and the 21st day in the hospital, there discharged a large amount of pus from the wound, and small amounts of fecal matter. On November 18th, the fourth day after the rise in temperature, and the 25th day in the hospital, he again had a normal temperature and pulse, and the discharge had almost ceased.

His progress from this time until the 6th day of December, which was the 43rd day in the hospital, was uneventful and his full recovery seemed assured. On this day in the afternoon he again complained of pain, but this time in his chest, and for which he was given a lotion by the sisters to apply locally, and when seen by the writer it was thought that neuritis of the intercostal nerve was the cause of his distress. There was very little disturbance in his temperature or pulse, and he again was told to have his family come for him, that he might return home.

His appetite was fairly good and his wound had again healed. On the 45th day in the hos-

pital, and the following day from the one referred to, early in the morning, after a quiet fore part of the night, he was seized with violent vomiting, and when the nurse came to assist him it was noticed that the vomitus was bright red blood. He soon expressed a desire for the bowels to move and the discharge was also noticed to be bright red blood. The writer was called and when his bedside was reached he was found to be weak, pulse rapid, covered with clammy perspiration and frequently vomiting blood, and passing blood by the bowel.

During the fifteen hours he lived after the onset of hemorrhage, he was given morphine to quiet, cold applications to the abdomen, plain serum for its effect on blood clotting, emetine hydrochloride by venous route, calcium, etc. Nothing seemed to do any good as the frequent bowel discharges were seemingly pure blood as was also the material vomited on numerous occasions. His condition grew steadily worse and patient died about fifteen hours after the first showing of the hemorrhage.

The conclusion drawn from this case is, that at least two bleeding points were active in the viscera at the same time. It does not seem possible that bright red blood from the stomach could pass entirely through the intestinal tube and emerge unchanged. Neither does it seem possible for blood from the intestinal side, even though just outside the pylorus, to be carried back into the stomach and be ejected bright red.

The young wife and father both refused to consider a post mortem examination, hence the case has to be reported incomplete.

Determination of the Number of Living Bacteria in a Suspension of Tubercle Bacilli.—Lange suspended in a solution of sodium chloride from 60 to 100 mg., moist weight, of tubercle bacilli taken from a glycerin broth or egg serum culture less than three weeks old. Suspensions were prepared, containing from 0.1 to 0.000,000,01 mg. of bacteria per cubic centimeter of sodium chloride. Of these suspensions 0.2 cc. was diluted with sodium chloride and inoculated subcutaneously or intracutaneously into guinea-pigs. Four hundredths cubic centimeter of the suspensions was sown on the surface of an egg serum medium and the growing colonies were observed for four weeks. The number of colonies corresponded with sufficient exactness to the number of living tubercle bacilli present in the suspension. Infection occurred in the animals not only after subcutaneous or intracutaneous, but also after tracheal inoculation, although, according to this culture procedure, only one living tubercle bacillus was present in the suspension.

ACUTE CORONARY OCCLUSION.*

By EMMET F. HORINE, M. D., Louisville.

Only within the last decade has acute occlusion of the coronary arteries attracted much attention. Previously such a condition had been diagnosed antemortem but, by most observers, it was considered rare. While the pathologists reported the occasional finding of a recently occluded coronary artery no one had connected this with a definite clinical picture. Thanks to the work of Dock, Osler, Krehl and Herrick particularly the classical clinical features are now well known.

With a clear description of the symptoms of an acute coronary occlusion before us we now recognize the fact that, in the past, we saw such cases but did not differentiate them from so-called angina pectoris. We also realize that acute occlusion is relatively common.

It should be understood that gradual coronary occlusion is usually unattended with symptoms until the process is quite advanced when myocardial failure slowly supervenes.

It is my purpose to briefly report three cases of acute coronary occlusion, selected from a group of twenty-one which I have seen during the past three years. With these reports before us the clinical picture will probably stand out more strikingly.

Case 1. (a) Acute coronary occlusion; (b) Arterio-sclerosis. Death in six months.

O. M., male, married, aged 48, movie theatre and restaurant owner, referred by Dr. O. S. Kash, Carlisle, Ky. on April 6, 1925.

Family history: Father died at 35, accident; mother living and well, being seventy years of age; one brother and one sister, both living and well.

Previous illnesses: Measles aged 8, mumps

followed by pleurisy aged 12. Was thin and delicate until his fifteenth year but since then has always been overweight. He has never taken much exercise nor has he ever done any hard manual labor.

Present illness: In good health but working quite hard until five weeks ago he suddenly experienced a severe pain in the left arm which seemed to run to the heart. This pain was noticed intermittently for a week when he had a very severe attack of precordial pain lasting fourteen hours. Since then has been so short of breath he has been unable to really attend to his business.

Physical findings: The radial and brachial arteries showed moderate infiltration. Moderate pretibial oedema was present. The heart was moderately enlarged to the left. No murmurs were present but a most typical gallop rhythm was noted. His blood pressure was 104-84 mm. Hg. with a ventricular rate of 120, an occasional premature contraction being noted. His vital capacity was 3150 c.c. being 55 per cent of his calculated normal. His urine was entirely negative. His blood Wassermann was negative.

Electrocardiograms: The abnormalities present are: inverted T and upward convexity of the S-T interval of lead I, low voltage of the Q-R-S group, ventricular premature contraction.

Course: Rest, diet regulated for reduction in weight, digitalis in a maintenance dosage and strontium iodide were advised. No improvement was noted and he gradually grew weaker dying six months later.

Case 2. Acute coronary occlusion. Recovery.

P. R. A., aged 30, married, lumber salesman by occupation, was referred for examination by Dr. C. S. Goodman on June 1, 1925.

He had never been ill until May 25, 1925,

*Read before the Louisville Medico-Chirurgical Society, Louisville, September 24, 1926.

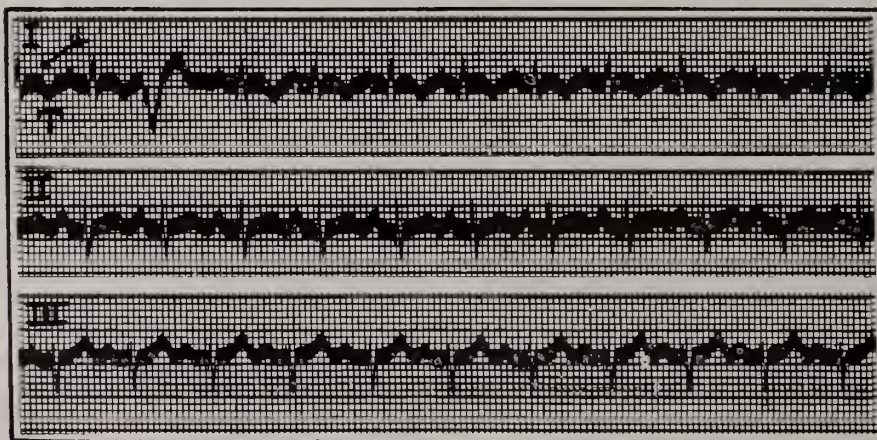


Figure 1 (case 1). Note the upward convexity of the S-T interval with inverted T in Lead I. A single ventricular premature contraction is present in Lead I.

when he suffered a severe attack of pain in the region of the heart running into the left arm. He stopped only a few minutes while dressing for golf and then went on the links. He now became aware of decided shortness of breath and after thirteen holes had to stop and lie down for half an hour because of the severe precordial pain. On the following day he had an attack of severe pain lasting fifteen minutes. On the same evening at six he again suffered a severe attack which lasted the whole night and was unrelieved by morphine. The pain was described as of a sharp, oppressive type which ran into the left arm. Since the last attack he has been very short

of breath on slight exertion.

Upon physical examination no precordial thrills were found, the heart was not enlarged nor were any murmurs detected. However, the sounds were of a tick-tack type. His blood pressure was 116-70 mm. Hg. with a ventricular rate of 84. His orthodiagram is shown in Figure 3. His blood Wassermann was flatly negative.

Electrocardiograms: The first record, "A" of Figure 2 was obtained six days after his initial attack of severe precordial pain. There will be noticed an upward convexity of the S-T interval and inverted T in lead I, very slight inversion of T in lead II and low voltage of T-III with slight diphasism. Record "B" was obtained twenty-seven days after the first one while "C" was made twelve months after "B".

Course: He was placed in bed for four weeks and twenty minims of tincture of digitalis given daily. At the termination of this period he was able to walk slowly without noticeable dyspnoea. His blood-pressure was then 104-66 with a pulse rate of 92. Gradual improvement has continued and at the last examination on July 2, 1926, his blood-pressure was 122-88. With the exception of slight reduction in intensity of the first heart sound no other abnormality was discoverable. He stated that he is able to do anything he desires if he goes slowly but that "excitement, undue exertion or overeating will lead to some discomfort in the region of the heart."

Case 3. (a) Acute coronary occlusion; (b) Diabetes mellitus. Recovery.

J. M. R., male, single, aged 58, executive, referred by Dr. Frederick G. Speidel for electrocardiographic examination on Jan. 11, 1926.

For fifteen years he has known he had a mild diabetes but has experienced no inconvenience from it. Otherwise he has been in good shape until three weeks ago, while dressing, he first experienced substernal and oppressive pain lasting a few minutes. Almost daily since then he has had recurrences of the same type of pain lasting a few moments and in addition some shortness of breath is noticeable. On the early morning of the day before I saw him he awoke suffering from "considerable" pain in the precordial region running into the left arm and down to the left hand. He localized this pain exactly mid-sternally at the level of the fourth rib and stated that from this point it radiates directly to the left shoulder and down the left arm only. This pain lasted without intermission for eight hours and even since then he has experienced discomfort in the left arm.

The heart was normal in size and showed only an accentuation of the second pulmonary

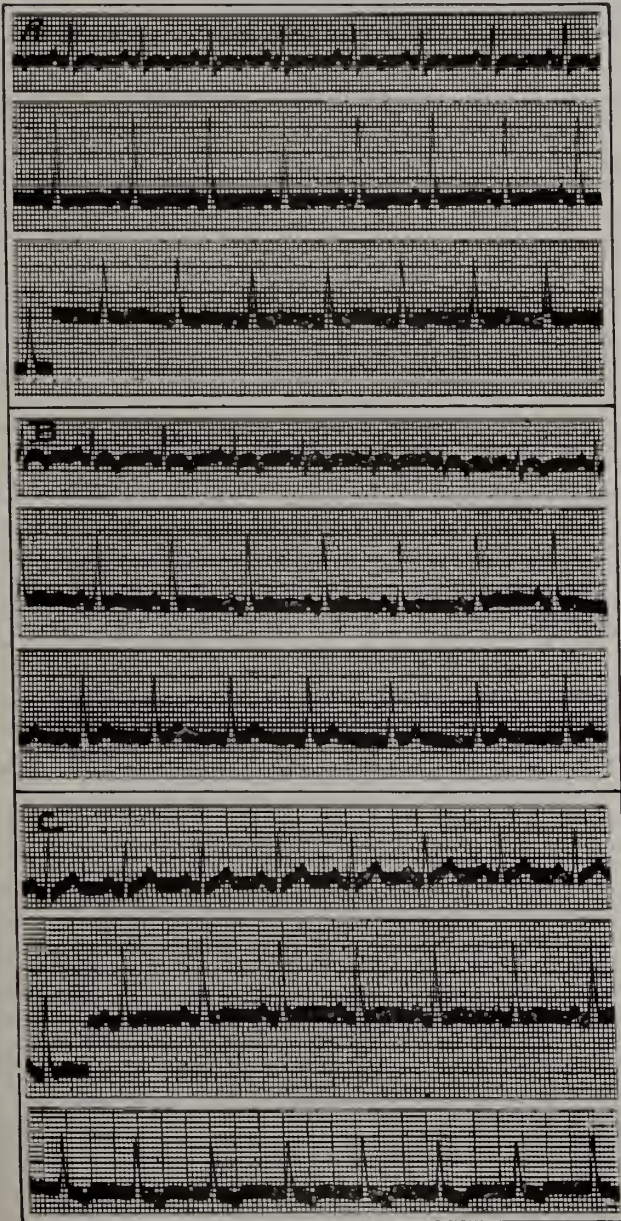


Figure 2 (case 2). The upward convexity of the S-T interval with inverted T in Lead I of Records "A" and "B" has disappeared in Record "C".

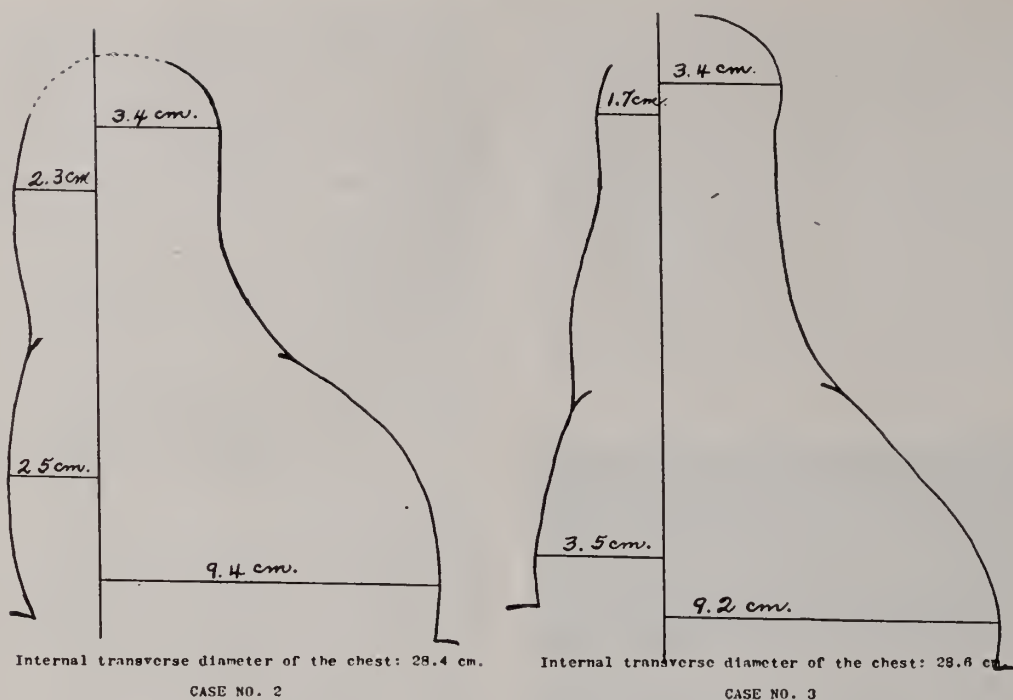


Figure 3. The orthodiagrams have been reduced to approximately half their original size

sound. His orthodiagram is shown in Figure 3. His blood-pressure was 132-80 with a pulse rate of 100 and a temperature of 99.6. The urine which had been sugar free with diet now showed immediate reduction with Benedict's solution. The specific gravity was 1.042 with a trace of albumin but no casts though numerous leucocytes were present and a rare calcium oxalate crystal. His blood-sugar, which Dr. Speidel had previously found to be 120 mgms., was now 280 mgms. per 100 c.c. The leucocyte count was 20,000. His electrocardiogram, Figure 4, showed the following: frank inversion of the T wave in leads II and III with upward convexity of the S-T interval.

Gradual recovery has taken place with rest in bed, theobromine sodium-salicylate for four weeks, weighed diet and insulin. At present he goes to his office daily but is limited as to physical exercise.

Acute coronary occlusion is encountered oftener among men than among women, roughly in the proportion of five to one. More cases occur in the sixth decade of life though one of my patients was only thirty years of age. Seasonal influences play some part for more cases are met with during the winter than during the summer months. Previous heart symptoms may or may not have been noticed. The patient is seized with a sudden attack of severe, oftentimes agonizing, substernal pain which may radiate upward into the neck or into the shoulders more particularly the left and down the left arm. Such

radiation of the pain is not always present and at times the pain may appear to be localized in the upper abdomen. The characteristic feature of the pain is not only the location and severity but also its persistence lasting from fifteen to thirty minutes with the shorter attacks to hours or even days with the longer ones. Morphine administered in large doses relieves the pain only partially if at all. The patient appears critically ill and frequently the face presents an ashen gray color.

Occasionally no pain will be noted as reported elsewhere with one of my cases, there being only marked prostration, a fall in blood-pressure, electrocardiographic changes and at times some of the other signs.

Following the attack considerable prostration is present and shortness of breath becomes noticeable. Frequently gross oedema soon becomes manifest with an enlarged and tender liver. For a few days immediately after the attack slight increase in temperature (99° to 100°) will be present. Moderate leucocytosis appears early, the white cells usually ranging from 15,000 to 25,000 per cubic mm.

If hypertension has been present previously the blood-pressure will often drop to normal levels. In those patients with normal blood-pressures prior to the attack decided hypotension will be practically always found shortly after the acute occlusion.

The heart may or may not be enlarged this being dependent upon previous lesions. Some-

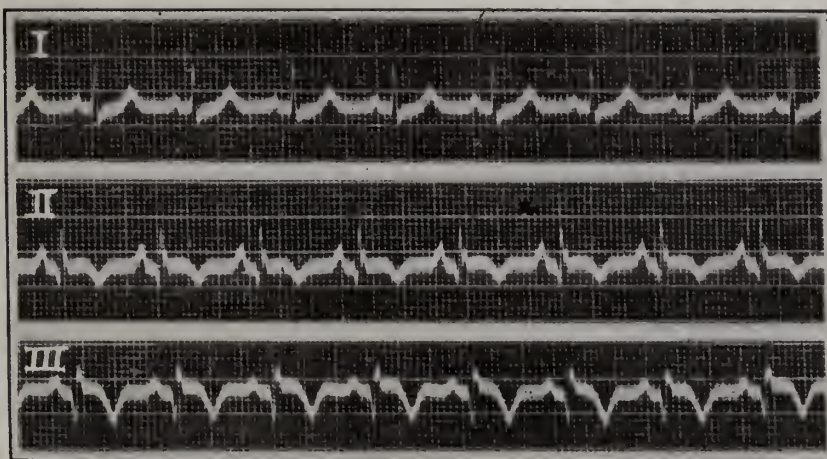


Figure 4 (case 3). Note the frank inversion of the T wave in Leads II and III with upward convexity of the S-T interval.

times a soft apical systolic murmur may make its appearance this being due to relaxation of the musculo-membranous ring of the mitral orifice. Usually the first sound and at times both sounds are faint. Gallop rhythm may make its appearance. A friction rub may often be heard if the patient is seen early and examined frequently. While such a friction rub is of value at times, it is so elusive and evanescent that its absence need not cause one to hesitate about making a diagnosis.

Electrocardiographic abnormalities have been encountered in all patients I have seen up to the present time. The chief features have been inversion of the T wave in lead I, in both I and II, or in both II and III and even in all three leads. A still more strikingly electrocardiographic feature has been an upward convexity of the S-T interval coupled with the inverted T ("coronary T"). Changes in the Q-R-S group such as low voltage, notching and slurring have been encountered. The various arrhythmias may also be found.

In doubtful cases I am led to believe that electrocardiographic studies are of great value. Particularly in younger individuals having precordial pain or in those suspected of having had an acute coronary occlusion of the painless type will the electrocardiogram prove extremely valuable.

There should never be any great difficulty in differentiating so-called angina pectoris from acute coronary occlusion. The location and radiation of the pain is identical in the two conditions. However, with angina pectoris the attacks of pain are of short duration relieved ordinarily by rest or the nitrites. With acute coronary occlusion the attacks are persistent and ordinarily of an agonizing severity lasting even for hours. The pain is not relieved to any degree by rest, morphine or

any other anodyne. With angina pectoris the blood-pressure either remains at the usual level for the individual or is elevated, whereas with acute coronary occlusion a marked fall in blood-pressure soon occurs. This fact of a fall in blood-pressure should be remembered and when acute coronary occlusion is suspected or has been diagnosed the nitrites are contraindicated. In angina pectoris neither increase in temperature, leucocytosis nor a friction rub is encountered.

The prognosis of acute coronary occlusion naturally is dependent upon the size of the vessel occluded and upon the condition of the myocardium in general. With occlusion of the main stem of one of the coronaries, ventricular fibrillation usually supervenes and death is practically instantaneous. When smaller branches are occluded there may be rapid or slow myocardial failure and eventually death after a period of hours or months. Also the infarcted area may soften to such an extent that, days or weeks after the acute occlusion, death suddenly occurs from rupture of the heart. In still other cases the collateral circulation is able to cope with the situation and the infarcted area is repaired by scar formation. Of the twenty-one recent cases I have seen twelve are dead. At times full recovery seems to ensue.

In the treatment of acute coronary occlusion the first thing to insist upon is absolute rest, for from four to eight weeks. Time must elapse before a sufficient collateral circulation can be established and repair of the infarcted area can be effected. Aside from morphine during the acute attack, drugs are not used at all by some physicians. I have given moderate sized doses of digitalis either alone or combined with theobromine sodium-salicylate in some cases. In other cases I have not used any drugs and I have been unable

to see any great difference between the ones receiving digitalis and those not so treated. When congestive failure is present I am sure that digitalis is of value and in addition calcium lactate seems to work well. At present I am using ephyllin which is supposed to be a better coronary dilator than theobromine. After the patient is permitted to get out of bed I usually advise the iodides.

I desire to express my appreciation to the gentlemen referring these cases for their kind permission to report them.

DISCUSSIONS.

Wm. Redin Kirk (Hendersonville, N. C.): I hardly feel competent to discuss Dr. Horine's paper, as I have had no experience whatever with cardiographic work. The heart cases that come under my observation are usually those heart conditions that we find associated with tubercular changes and other changes of pulmonary character.

I do not believe the essayist stated whether or not a Wassermann reaction was made in the cases reported. I think we are ascertaining more every day about the effect of syphilis on the heart, and it is very interesting to see these changes, especially in the aorta, that syphilis produces.

Sturat Graves: In our autopsy work at the University of Louisville Medical School we have found several cases of the type Dr. Horine has reported which seemed to be true end-results. I recall one case in which the cardiac muscle was destroyed, the occlusion being such that the circulation could not be made complete. In two other cases coronary occlusion was discovered incidentally and apparently had nothing directly to do with the cause of death.

J. Rowan Morrison: The subject of coronary occlusion is very interesting, and especially insofar as to what relation it bears, if any, toward the so-called angina pectoris. We must differentiate between cases of coronary occlusion and certain types of angina pectoris. As Dr. Horine has said, in coronary occlusion there is a sharp attack of precordial pain which is not relieved by the administration of opiates. In an ordinary attack of angina pectoris morphine gives relief. Then there is usually more marked dyspnea than one would expect with the physical findings about the heart. In coronary occlusion one sees leucocytosis persisting for a considerable length of time. If the occlusion involves the main branch of the artery, the prognosis is usually unfavorable. Occlusion of the smaller branches is attended by less danger and the individual may live for a greater length of time. The electrocardiograph and a carefully taken history give us much information in cases of this kind.

The treatment of coronary occlusion means rest in bed for a considerable period, and then

careful guidance of the patient for a much longer time as regards rest, care, freedom from anxiety, emotions, etc. The electrocardiograph is at the present time, as much as it has been developed so far, is of distinct advantage in the practice of medicine.

We are quite well aware that everything cannot be told by the electrocardiograph, because some people have a practically normal cardiogram and yet may be very ill, and we cannot always tell what is the matter with them or with the heart by the electrocardiographic tracing. However, the changes which Dr. Horine has shown us indicate that there is something wrong.

So far as making the prediction, based upon the cardiographic tracing, that the patient is going to die next week or within two or three months, I do not believe we can tell these things. At the same time we know that the changes in cardiac function as shown by Dr. Horine are grave signs. Sometimes the patients do not die within a year or two, but no definite prognosis can be given. I believe the electrocardiographic study in all heart cases is extremely advantageous.

Emmet F. Horine (in closing): The leucocytosis in acute coronary occlusion is due to the fact that protein material is absorbed from the infarcted area. The effect is the same as when a foreign protein is administered for any purpose, there is usually a definite increase in the leucocytes and a moderate elevation of the temperature. In cases such as described I have seen the leucocyte count range from 12,000 or 14,000 to 32,000.

With reference to the changes found in the heart: If merely a small branch of the main vessel is occluded, there will be temporary obstruction of the circulation, then the establishment of collateral circulation and scar formation. That was well illustrated in a patient whom I saw three years ago, but unfortunately no electrocardiographic tracings were made because the woman was in the hospital and the electrocardiograph could not be moved there. But from the clinical history, slight fever, and increase in leucocytes, we felt definitely certain that coronary occlusion was present. The patient was about 55 years of age and had been in good health, prior to the sudden attack of precordial pain. However, the history showed that three years previously she had an attack of chest pain quite severe in type from which she recovered. In the second attack, death occurred within four days and at autopsy a new occlusion was found and in the wall of the right ventricle there was a fibrous area evidently the site of the previous infarct. This case history is interesting and shows definitely, as indicated also by

many other case records, that coronary occlusion is not necessarily immediately fatal. It may be immediately fatal though not necessarily so.

We are all familiar with the case of a gentleman who recently died in Louisville who for many years had extremely high arterial tension and the hypertensive type of cardiac disease. His systolic pressure was always between 220 and 250 and his diastolic pressure 140 to 160 mm Hg. He was fairly careful about his diet and habits and existed in comparative comfort until suddenly one day about eleven o'clock he experienced severe pain in the precordial region. He was conscious for five minutes and then became unconscious, dying within eight hours. The point I want to make is that while this man for many years always had a systolic pressure of 220 to 250 and a diastolic pressure of 140 to 160, when I saw him shortly after his seizure he had a systolic pressure of 138 and a diastolic pressure of 80, the previous high pressure being immediately lowered by the intracardiac event.

In regard to the Wassermann reactions in the cases reported, negative reports were obtained in all. Also in the other cases I have seen thus far syphilis has apparently played no part whatever.

Many of these patients, of course, have preceded coronary sclerosis. It is interesting to consider the relationship between diabetes mellitus and changes in the coronary vessels. Several years ago Wilder reported before the Southern Medical Association sixty cases of diabetes, and in this group of individuals he found coronary sclerosis and marked myocarditis in eighteen. One of the patients included in my report had diabetes for a number of years prior to development of the cardiac affection.

I believe we all agree with Dr. Morrison that the electrocardiograph is of value in cardiac cases. Occasionally a patient may have precordial pain of moderate severity and when electrocardiographic tracings are made nothing abnormal may be noted. However, in the cases where I have been able to say or guess from the clinical history that the patients had coronary occlusion electrocardiographic changes have been present. Therefore, I think differential diagnosis by the electrocardiograph is of inestimable value.

SOME UNSOLVED PROBLEMS OF OTOLARYNGOLOGY.*

By JAMES PEABODY, M. D., Louisville.

Although we have made considerable progress in this specialty during the past fifteen years, there remain many ear, nose and throat diseases which present problems not satisfactorily solved in the minds of most of us.

The object of this paper is to bring before you for discussion many questions which arise in the practice of otolaryngology concerning which there are conflicting opinions, and to tell you about many conditions which we fail to cure.

Dr. Harris P. Mosher (*Annals of Otology, Rhinology and Laryngology*, March, 1925) has written a paper on this subject in which he mentions many diseases about which we should know a great deal more than we do at the present time.

In otology, as Dr. Mosher sees it, the two major unsolved problems are: chronic progressive deafness, and otitic meningitis. As far as I am able to determine, we have not achieved very much in curing our chronic hard-of-hearing patients, although advances have been made in the treatment of the deaf by determining in many cases the causative factors, and by being able to make more specific diagnosis; but we must build our hopes on the prevention rather than the cure of deafness. There is still a wide diversity of opinion in regard to the conditions that have preceded the chronic stage, and as to the treatment necessary to arrest the disease or improve our patients with impaired hearing.

We can classify our cases of defective hearing into two kinds: (1) congenital, and (2) acquired. About the only hope we can offer the congenital cases is through the American Federation of Organizations for the Hard of Hearing, and referring the patients to a school for lip reading. We recognize at least four types of acquired deafness: first, and by far the most frequent, chronic catarrhal or hyperplastic otitis media associated with varying degrees of involvement of the inner ear and auditory nerve; second, chronic suppurative otitis; third, otosclerosis, and fourth, cases of inner ear and nerve deafness without otitis media.

It is a well known fact that we cannot determine the degree of deafness by the appearance of the ear drum; also we see cases where, following suppurative otitis media, the ossicles have partly necrosed, the membrana tympani almost entirely destroyed, and yet the patients hear very well. On the other hand, many cases of catarrhal deafness or otosclerosis

*Read before the Louisville Medico-Chirurgical Society, Louisville, September 24, 1926.

rosis may show but little change in the drum membrane, but the loss of hearing may be considerable.

In the chronic catarrhal otitis cases we remove the tonsils, nasal spurs, or correct a septum deviation, Politzerize or catheterize the Eustachian tube, combined with local treatment to the nose and throat, and still in many of our patients there is not only no improvement but the deafness becomes worse. They go the rounds from one otologist to another, besides taking a chance with the chiropractor, naturopath, osteopath, the deafness-cure quacks with their many mechanical devices and brands of ear oils, but it is not often that the Christian scientists undertake to cure a long standing case of deafness. I do not mean to give you the impression that we always fail to help our cases of impaired hearing, because even the quacks are often successful since the deaf individual is easily fooled and has an intense desire to rid himself of his infirmity.

What is the etiology and pathology in chronic nonsuppurative otitis media? Dr. Francis P. Emmerson, of Boston, states that "we find our etiology to consist in a chronic infection sometimes the sequela of acute infectious diseases or influenza subject to acute exacerbations with varying degrees of virulence constantly tending to invade contiguous as well as remote structures by continuity or through the lymphatics or blood stream." He believes that we are dealing with a focal infection and a toxin which cause tissue reactions in the tympanum, especially about the ossicular joints, just the same as the reaction in arthritis in other parts of the body. Also Dr. Emmerson believes that this toxin has at times a selective action on the cochlear and vestibular branch of the auditory nerve.

In otosclerosis there are many problems still unsolved, but it is fairly well established that various and widely divergent factors can excite the appearance of otosclerosis in a predisposed person, and that in a large percentage of cases the endocrine glands are direct etiologic factors through their influence on normal metabolism.

Speaking of the ductless glands: I do not believe we know enough about their actions to come to any definite conclusions as to the possible relationship between the endocrines and certain ear, nose and throat diseases whose etiology is doubtful. Success has been reported in otosclerosis with the pituitary and ovarian extracts, also some cases of hay fever and asthma; but the tendency at present is to give polyglandular extracts, just as we used to give "shotgun" prescriptions.

What are we doing about the other major problem in otology, namely, otitic meningitis? Dr. W. P. Eagleton, of Newark, N. J., in a

recent issue of the Journal of the American Medical Association reports thirty-three consecutive cases with ten operative and one spontaneous recovery. Ten patients were not operated upon because they were seen in the terminal stage. It will be impossible for me to describe the technique of his operation, but he emphasizes the fact that operation should be performed while the inflammation is limited to an area adjacent to the primary focus of infection or an adjoining basal cisterna.

Dr. Mosher states that there are two places in meningitis where pus accumulates, namely, beneath the pia arachnoid quilted into the sulci of the brain and at the base of the brain, especially in front; and he reminds us that we cannot wash the sides and the base of the brain, also that the arachnoid lakes of pus cannot be removed by any single surgical procedure. Fortunately meningitis complicating otitis media is rare. When spinal puncture shows pus and bacteria the mortality is very high. It seems to me that our hopes will be with sera and mercurochrome.

There are many other problems in otology, some of which I will briefly mention. How much help do we get in our work with the Barany tests? In my opinion this subject is still in the experimental stage, and so far we have gotten but little practical assistance. During my training in Vienna I saw Dr. Neuman perform several operations on the labyrinth, but I do not believe there are many labyrinth operations performed in this country.

Our handling of acute mastoiditis is very satisfactory, but it is not always easy to decide when to operate; and while roentgen-ray examination of the mastoid helps us at times, it often confuses us so that we must rely chiefly on the clinical findings. A few good operators—like Dr. Barnhill—continue to do the blood clot operation in acute mastoiditis, but I have never tried this technique and as far as I am able to determine no one in Louisville has adopted the method. When it succeeds the healing time is shortened and the scar is scarcely noticeable, but I feel sure that there are a certain number of failures which would cause great embarrassment and increase the danger to the patient.

As to the radical mastoid operation: We have never solved the problem of being always able to decide when to do the radical or the simple operation in many cases of chronic suppurative otitis without cholesteatoma or complications, and there is some difference in technique. Some operators use the Thiersch grafts, while others employ a flap from the meatus.

Thrombosis of the lateral sinus does not present any big problem to the otologist if

the patient is seen in time and has not been under treatment too long by the general practitioner for typhoid fever, malaria or endocarditis. The operation is fairly well standardized, although there is a division among otologists as to ligation or resection of the jugular vein. It seems to me that the result from ligation are just as good, besides being simpler more quickly performed and less scarring.

What problems have we yet unsolved in rhinology? If we can believe all that enthusiastic specialists write about nasal reflex neuroses, we have very few problems to solve. One prominent rhinologist claims that he has "seen no single case of spasmodic asthma in which the source could not be traced to the existence of some disease in the nasal cavity." Other specialists cure all headaches, neuralgias, heart and stomach diseases and dysmenorrhea by treating the hypersensitive spots on the septum, or by some form of nasal surgery, particularly the submucous resection of a slightly bent septum, or a small nasal spur. We all get some brilliant results from our surgery in the nose, but operations on the nasal septum are done too frequently, especially the ten minute operation on a slight deviation.

The big problem in our work on the nasal accessory sinuses is in making a correct diagnosis. We have very little trouble with acute sinusitis, but in the chronic cases we have to call on the roentgenologist to help us. One x-ray man writes that a complete examination of the sinuses requires at least seven roentgenograms. This makes it very expensive to the patient, and even then we are sometimes left in doubt. We do fairly well with our operations on the sinuses, but the ethmoid sinus presents more difficulties than the others as it is very difficult to exenterate all of the ethmoid cells without subjecting the patient to the danger of meningitis. We get better results after operations on the maxillary antrum, because of its ease of accessibility, although we still hear of deaths or profound shock following what should be a simple procedure, namely, puncture and irrigation of the antrum. When this accident happens, in my opinion, the point of the needle is not in the antrum, but is either buried in the inflamed mucous membrane, or it has stripped the membrane away from the underlying bone and undue force was used which caused a cerebral air embolus or some disturbance of the vagus through its connection with the second branch of the trigeminal nerve.

Are we overlooking a diseased antrum when we fail to demonstrate real pus after irrigating? We know now that polypoid degeneration of the antral mucous membrane can exist and yet no pus can be seen. The pathology here is the same as in hyperplastic eth-

moiditis associated very often with nasal polyps.

Another large problem is the prevention and cure of the so-called common cold. The Public Health Service recently announced that ninety per cent of the population of the United States has a cold once a year and eighty per cent of all illness is due to common respiratory infection, in spite of the fact that there are numerous cold vaccines and many patients willing to try them. From all accounts it appears that the chlorine gas advocates were going to cure every cold, but there are only a few supporters of this method at present.

In recent years much progress has been made in the prevention of anaphylactic diseases, such as hay fever and asthma, especially since we now recognize several types which can be differentiated by the cutaneous test; but our results are not always perfect and we fail to relieve many sufferers. We used to think that some kind of pollen was the only etiologic factor, but now it is well established that a wide variety of protein agents, including not only those of foods but also epidermal proteins of the lower animals, as well as substances of vegetable origin, as tobacco, orris root, cotton, etc., must also be considered; in fact the treatment of hay fever and bronchial asthma is fast becoming a speciality in medicine.

The cause of atrophic rhinitis or ozena has never been determined. Some think this disease originates in the nasal sinuses in childhood causing changes in the bone and mucous membrane of the nose; others think it is due to a food deficiency in early life. Several years ago we thought we had a specific bacillus—the coccobacillus of Perez—but patients were treated with a vaccine from this organism without any appreciable result. Dr. Halle, of Berlin, has devised an operation which brings the lateral nasal wall in contact with the septum and reports wonderful results.

In laryngology we have with some patients difficulty in making a differential diagnosis between tuberculosis, cancer and syphilis of the larynx by inspection alone, and mistakes are being made by many. We know now that tuberculosis of the larynx is often cured, but there is no consensus of opinion as to the best means of treating this condition. Rest of the larynx is the most important measure. Some laryngologists report good results from the use of chaulmoogra oil injected into the larynx and trachea, while others condemn its employment. Dr. Oscar O. Miller at Waverly Hills still holds to the opinion that exposure of the tubercular larynx to sunlight is the best treatment.

Cancer of the larynx is still almost a hopeless condition, although cures are reported by extirpation of the larynx and the use of radium.

There are two conditions in the oropharyngeal cavity which may worry the laryngologists, namely, Vincent's angina and cases of fulminating septic infection of the pharynx and larynx. I have been reliably informed that there have been at least four reported deaths from Vincent's angina in Louisville in the past sixty days in spite of the fact that we believe neosphenamin is almost a specific for this disease, and the differential diagnosis between Vincent's, diphtheria, streptococcal sore throat and syphilis should not present any difficulty with the assistance of a competent laboratory man.

Regarding septic pharyngitis: We do not know why in an apparently simple infection of the tonsil or lateral pharyngeal wall there will suddenly develop an extensive inflammatory infiltration of one or both sides of the pharynx, followed by edema of the uvula, possibly of the glottis, with no pus focus apparent, and this accompanied by difficult respiration, profound exhaustion and all the symptoms of general sepsis.

About two years ago I had a patient who started with a simple pharyngitis but ended with a tracheotomy in spite of many unsuccessful efforts to find pus somewhere in the throat. There will always be a doubt in my mind that it was absolutely necessary to tracheotomize this patient, as I felt the symptoms were abating, but I was unwilling to shoulder the entire responsibility of opposing the consultants in this case.

Dr. Chevalier Jackson knows about all there is to know concerning the use of the bronchoscope in removing foreign bodies from the trachea and bronchi, also he is successfully draining lung abscesses; but there is much to be learned about the diagnosis of chest conditions with the bronchoscope.

Last, but not the least in the minds of the medical profession and the laity, is the tonsil problem. It has been my observation that every time and every phase of the tonsil question is mentioned before a medical society, there is always a lively and sometimes a too lengthy discussion; but the time will never come when we are in perfect accord as to the indications, contraindications and technique of tonsillectomy. There are many methods of removing the tonsils and all have their advantages and disadvantages, but regardless of the operation, or type of operation, accidents might happen to anyone, such as hemorrhage primary or secondary, death from anesthetics general or local, abscess of the lung, and sepsis. When an operator feels sure that he

has a technique which completely removes the tonsils with the greatest degree of safety to the patient and the least trauma, discomfort and distortion to the throat afterward, then he should not change his method. We have yet to decide whether a lung abscess after tonsillectomy is inspiratory or embolic. Although the majority of writers favor aspiration as the cause, I believe it usually is embolic, but I cannot prove it.

As regards the anesthetic: There are specialists who refuse to perform tonsillectomy under local anesthesia because they think it is too dangerous, and others state that an adult should never be given a general anesthetic for tonsillectomy. Some use suction, others say it predisposes to hemorrhage. We do not even know the function of the tonsil. Does it have anything to do with the production of lymphocytes for the blood stream? Does it have an internal secretion? Does it serve as a protection against bacterial invasion? Are the endocrines a factor in causing adenoids and tonsils to hypertrophy? How young should we remove the tonsils? How old is it safe to operate? After being able to answer all these questions, we will still have the main problem: Is the tonsil the cause of the disability in question? Or, in other words, does it harbor the focus of infection for which we are looking?

Just let me mention a few of the conditions justifying removal of the tonsils where a focus of infection is suspected: Arthritis, acute or chronic; endocarditis, myocarditis, pericarditis, chorea, nephritis, pyelitis, colitis, neuritis, infectious jaundice, osteomyelitis, even appendicitis, peritonitis, ulcer of stomach, pulmonary gangrene, cervical adenitis, paranasal sinus disease, predisposition to common colds, chronic toxemias without localized lesions, as well as certain endocrine disorders; besides we have the local conditions in the pharynx, namely, tonsillitis, one or more attacks of quinsy, Vincent's angina, tuberculosis, cancer of the tonsil, otitis media, diphtheria carriers, and simple hypertrophy causing obstruction to breathing or impairing speech.

With the knowledge that any one of the conditions just mentioned is often cured by the removal of tonsils and adenoids, and because pressure is often brought to bear upon us by the family and the patient, I feel sure you will agree with me that the otolaryngologist is excusable if occasionally he does a good tonsillectomy without entirely relieving the patient of all of his symptoms.

DISCUSSIONS.

Samuel G. Dabney: Dr. Peabody has touched upon so many points that it would be quite impossible to discuss all of them. I suppose the laryngologist to whom he referred, when he

spoke of a distinguished worker in this line who had claimed there were few cases of asthma that could not be relieved by nasal treatment, was Bosworth. As probably all of you know, Bosworth, thirty years ago, wrote one of the best text books in the English language on the nose and throat. He devoted one volume to diseases of the nose and nasopharynx, and another to the pharynx and larynx. He was the first in America to direct attention to the importance of free nasal passages. I am not certain that Bosworth would have the same idea of curing nearly all cases of asthma, if living now, as he had when his original statements were made.

Another author Dr. Peabody seems to have read is Shambaugh, of Chicago. Shambaugh, like myself, is perhaps rather conservative in his opinions concerning many things, and his articles have always appealed very strongly to me. In the latest number of the *Laryngoscope* he has a paper in which he calls attention to some of the fads and fancies in laryngology and rhinology. Some of these were mentioned by Dr. Peabody when he spoke of applications to the nasal septum. Shambaugh alludes to cases in which nothing was done except to apply water to the septum, and the patients recovered!

Reverting for a moment to Dr. Peabody's remarks about the nose: I am going to make some very unorthodox statements. I do not believe nasal obstruction is often the cause of ear disease. It appears that nearly everyone who does work in this line is prone to speak of nasal polypi and practically every other type of nasal obstruction, existing for any length of time, as ultimately resulting in disease of the ear. I have seen a great many people with obstruction from polypi deflections of the nasal septum, etc., and a very small proportion of them had disease of the ear. I think this opinion is held to greater extent by English writers than others. Nasal obstruction, *per se*, is not a frequent cause of ear disease. I refer strictly to obstruction within the nasal passages. No one can deny the relationship between diseases of the ear and those of the nasopharynx, and it is true that in some cases nasal obstruction produces disease of the nasopharynx, and in that case there may occur extension through the Eustachian tube to the middle ear; but this is not, in my judgment, the rule. Of course removal of the nasal obstruction is indicated for other reasons,—I am not disregarding the importance of that for a moment, I am speaking simply of the relationship of obstruction within the nasal passages to disease of the ear.

Dr. Peabody spoke of a problem with which we are often confronted, and that is chronic catarrhal inflammation of the middle ear. It is not always possible to determine whether the condition is one of otosclerosis, nor to what extent the nerve of the ear is involved. Quite fre-

quently there are mixed cases. As a result of my personal experience, when a deaf person applies for advice, unless there has been some recent change, I give him three to five treatments, and if he is no better by that time, I tell him "good-bye!" In the strictly catarrhal cases where deafness is only partial, I have the patient report for treatment once a month or every two months. The usual measures are employed, including the Eustachian catheter. I believe many of these patients can be prevented from getting worse by a few visits at intervals of several weeks or even months, especially when the first two or three treatments produce some improvement. Some of the cases are hopeless and progressive from the beginning.

Concerning the tonsil problem: I agree with Dr. Peabody that the question remains unsettled, and there is no prospect of our settling it at this time. I do not agree with him, however, that all of the systemic and local diseases he enumerates are caused by the tonsils. I doubt very much whether such a position can be substantiated. However, tonsillectomy is so infrequently followed by serious consequences that, as Dr. Peabody has stated, its performance may sometimes be justified experimentally.

In atrophic rhinitis, I believe a certain proportion of cases,—unfortunately not all,—with dry, crusty inflammation of the nasal mucosa, attended by offensive odor, may be helped by treating the accessory nasal sinuses.

In regard to accessory sinus disease: Personally I do not regard the roentgen-ray as being of great value in diagnosis. There are two things, however, for which it is absolutely essential. One is for outlining the frontal sinus preceding external operation. I have such a case under observation just now. Under these circumstances the roentgen-ray gives an accurate outline of the frontal sinus, its size and direction, etc. and is therefore of the greatest value. The other instance in which the roentgen-ray is of inestimable value is in showing the relation between the teeth and the antrum of Highmore. Occasionally it is of value, also, in cases to which at first we may not attach very much importance. Three weeks ago a lady in the late thirties consulted me because of persistent pain over the right eye. She was supposed to have frontal sinus disease; the anterior end of the middle turbinate had been resected and the frontal sinus treated, first one side then the other, but only slight temporary relief had been obtained. Roentgen-ray examination was made by Dr. B. W. Bayless who reported slight cloudiness of the right antrum of Highmore, and on transillumination I thought the right antrum was a little darker than the left. I informed the patient that first I would irrigate the antrum, as it was not an uncommon experience that disease of the antrum of Highmore caused pain over

the corresponding eye. That was three weeks ago. Pain in the brow subsided within a few hours. I saw her twice afterward and she complained of no discomfort. The irrigation removed some grumous masses yellowish in color and that was all. Of course I am unable to say whether or not relief from pain will be permanent.

Dr. Peabody alluded to acute septic sore throat: The present trend of opinion is that all cases of so-called septic sore throat are due to streptococcal infection, whether the condition manifests itself as Ludwig's angina, whether it involves merely the pharynx, the aryepiglottic folds, or whether the glands of the neck are infiltrated. Occasionally the disease is associated with deep-seated cervical abscesses. All these manifestations are due to streptococcal infection. The pharynx is first attacked, and involvement of the other structures depends largely upon the severity of the process. St. Clair Thompson calls attention to the fact that tracheotomy is sometimes necessary to obtain relief in these cases, but lays greater emphasis on other forms of treatment, especially stimulants and supportive measures.

Claude T. Wolfe: When Dr. Peabody reads a paper he covers the subject so thoroughly that little is left for us to discuss. However, there are a few points I would like to mention. I believe a combination of three factors can be held responsible for many of the cases continued and progressive deafness, namely, chronic catarrhal otitis media, chronic suppurative otitis, and otosclerosis.

I have recently been in communication with Richardson, of Washington, who is claiming much relief in deafness from otosclerosis by means of roentgen-ray exposures. In a letter received today he mentions fifteen cases in which marked improvement in hearing was obtained by means of the roentgen-ray. Exposures are made with the head of the patient in different positions that the rays may penetrate the parts he believes to be principally involved.

Last year I had occasion to talk with quite a number of English specialists in regard to the Barany chair: The consensus of opinion seems to be that the Barany chair has not fulfilled expectations, in other words it is not dependable and is being gradually relegated to a minor place in the diagnosis of lesions for which it was recommended.

As to the blood clot method in mastoiditis: I have not employed the blood clot method, *per se*, but rather one of the modifications now in common use. The mastoid wound is closed with two rows of sutures. The first includes the deeper structures and the second embraces the skin, leaving a small opening at the lower margin of the wound. I formerly left an opening above and below with a small wick of gauze

inserted, so that in the event of suppuration following the operation the benefit of through-and-through irrigation could be obtained with mercurochrome or some other solution. It is my present custom to only leave an opening below with a small gauze wick inserted which is allowed to remain for two or three days. This plan is followed whether the mastoid is extensively opened or not. In a recent case the process subsided within less than three weeks under this plan of management although a very extensive mastoid operation was performed.

In regard to atrophic rhinitis: Last summer I had the opportunity of seeing Beck use his dental wax implantation method. He dissects the mucosa from the septum over an area one and a half by two inches and places a wax implant one inch in width and one and a half inches in length underneath. This plan is followed on each side of the septum. I have used the method in three cases, but am able to say nothing about the final result as only one side was subjected to operation; in any event no conclusions could be drawn from these cases.

Dr. Peabody mentioned Vincent's angina: I have seen quite a number of cases of this disease during the last two years, and have tried all the arsenical preparations, trichloroacetic acid, etc., but my best results have been secured from silver nitrate in 50 per cent solution. I have seen some very remarkable results from this method of treatment particularly when the tonsillar area was involved.

Phillip F. Barbour: Dr. Peabody's paper interests the pediatrician almost as much as the otolaryngologist. At the last meeting of the pediatric section of the American Medical Association a well known specialist reported forty cases of intestinal trouble in children treated by opening and draining the mastoid. This method of treatment was introduced several years ago by Marriott, of St. Louis, Mo., who reported quite a number of similar operations. This particular paper did not meet with a very hearty acceptance among pediatricians. The cases described were in children with extreme dehydration, presumably due to intestinal disturbances, without any localizing symptoms about the ear. It was only because of the dehydration, prostration, etc. of the child, and the lack of evidence of an inflammatory cause of the intestinal trouble, that these men were led to operate upon the mastoid. They got their idea from the fact that a great many mastoid inflammations were found at necropsy on children dying from various intestinal disturbances. I was told by one of the members of the American Pediatric Society, who was present at the meeting I have mentioned, that they were all very much opposed to the procedure as routine in the treatment of ileocolitis, summer diarrheas, etc. The point I cannot quite understand is how benefit accrues when no pus

is found in the mastoid and it could not therefore be a focus of infection.

We know that in most cases of well-defined mastoid disease with an abundance of pus present, it is infrequent to find the child suffering from intestinal derangements. If known definite pus in the ear does not cause colitis, in general experience, it is hard to believe that colitis is the result of a mastoid infection which is not characterized by any symptoms. It is rather difficult to persuade yourself to advise putting a child through such an operation when there are no symptoms except a certain dimpling of the drum on its superior aspect. Certainly the indications for an operation are not clean-cut enough as yet to make it a general procedure. The great majority of mastoid cases do not present colitis as a symptom, and a great number of colitis cases present no evidence of mastoid disease at first sight. In autopsy on such cases there has been found a gelatinous material in the antrum which was thought to be pus, but which was not pus. Helmholtz, of the Mayo Clinic, has found a grumous material in the mastoid on autopsy that is believed not to be abnormal.

The question of disease of the nasal accessory sinuses is interesting to me, as I have had some cases in children where cure was obtained by treatment of the nasal condition alone. I believe there are definite symptoms in children due to sinus involvement. I was taught at medical school that children did not have any nasal accessory sinuses. However, I heard Arbuckle say he had seen a definite sphenoid sinus in a new born baby and that he had aspirated material from the sinus. It was a case of cleft palate in which the whole area was exposed and he inserted a needle into the sphenoid sinus. So he claims that the sphenoid sinus, at least, is present from the time of birth. Among other things Arbuckle suggested that in the nasal troubles of children we should pay due attention to the condition of the accessory sinuses.

Some of the most interesting experiments in the study of the sinuses have been made by Shea, of Memphis, Tennessee. They have devised certain positions in which roentgenograms are to be taken and claim remarkable results in deciding whether sinus disease is present or not. They spoke of this particularly with reference to the frontal sinus. In some instances, however, it was impossible to determine whether the maxillary, sphenoid or ethmoid sinuses were present or absent. It seems to me some plan should be devised by which the diagnosis of sinus disease can be made without resort to the roentgen-ray. I have found this method exceedingly unsatisfactory. When sinus disease exists the symptoms should be sufficient to prove it.

Regarding the tonsil question: I agree with Dr. Peabody that no one has as yet said the last word about the indications for tonsillectomy. I

think it is largely a matter of the judgment and opinion of the individual physician. Personally, I believe that the question of tonsillectomy is going to depend largely upon whether the tonsils are really the source of infection. Many times I find enlarged tonsils without any evidence of infection, without involvement of the lymph glands in the tonsil area, although the tonsils protrude into the throat. I do not regard such tonsils as dangerous to the child except so far as the size of the tonsils and possible toxic condition may be concerned. In other instances the tonsils are small, contracted and submerged. Many operators advise tonsillectomy in either case. We know that a small tonsil may be the source of greater danger than an enlarged one. There may be involvement of the glands which drain the tonsil area, although the surface of the tonsil itself may show little or no evidence of infection. I am decidedly of the opinion that tonsillectomy should be performed where the glands draining this area show evidence of involvement. If they do not, I advise against tonsillectomy, as under such circumstances I do not believe the tonsils are contributing anything to the patient's illness. That is my criterion in advising for or against tonsillectomy. I do not believe the nose and throat men are paying quite as much attention as they should to the deep and superficial lymph glands of the neck in making some of their diagnoses. I have found this a wonderful help to me, especially the postcervical lymph glands. I have found them enlarged many times, and know they do not become enlarged unless there is infection in the source which they drain. If these glands are not involved, the patient most likely has no serious nasopharyngeal, postnasal or ear disease. If there is the least amount of pus in the Eustachian tube, there is certain to be involvement of the postcervical lymph glands.

Charles G. Lucas: Dr. Peabody has given us one of the most interesting papers I have ever heard read before a medical society. I wish to speak of only two points. The essayist mentioned tuberculosis of the larynx. I always remember the suggestion of our old friend Dr. H. Horace Grant, to do a gastrostomy in such cases, and can see the real relief from its use. The other point is in regard to pulmonary abscess. One afternoon at Jackson's clinic in the University of Pennsylvania I saw eighteen cases of abscess of the lung under treatment by bronchoscopic methods. I have wondered how many cases of pulmonary abscess we are overlooking here.

I am in full accord with what Dr. Barbour said about involvement of the postcervical glands as an indication for tonsillectomy.

Oscar O. Miller I wish some of the other gentlemen had discussed the question of chronic tuberculosis otitis media. We have had a number

of cases of this type at Waverly Hill Sanatorium which had been discharging for many months, and even years. In a few cases occurring in adults considerable relief has been obtained by reflecting sunlight with a special mirror into the auditory canal.

Patients with advanced tuberculosis of the larynx present a distressing picture,—one that is not likely to be forgotten. I believe that nearly all cases of far advanced pulmonary tuberculosis have at some time had damage to the larynx. Mild cases of laryngeal tuberculosis in a moderate number of instances get well without treatment. On the other hand, other patients with acute tuberculosis of the larynx invariably die despite anything we can do for them. There is another type in which the process is more or less chronic, and in which ideal results are obtained with appropriate treatment, and where resistance is good.

Of thirty-seven cases of tuberculosis of the larynx occurring at Waverly Hill Sanatorium during 1925, nineteen were males and eighteen females. In nine of these, the pulmonary lesion was moderately advanced, and in twenty-eight far advanced. Eighteen succumbed to the disease, seven were greatly improved, and in five there was complete healing of the tuberculous lesion in the larynx.

The method employed in treating these cases was heliotherapy. This is applied by means of a special set of mirrors. The patient conducts his own treatment and is taught to reflect sunlight with a laryngoscope onto the diseased areas. Many of these patients receive relief from pain within a few days, in a number of cases after three treatments. The patient begins with an exposure of one minute a day, and increases the exposure a minute a day until he reaches ten minutes. Over exposure of the larynx to heliotherapy results in irritation and edema. In a few cases where the larynx tolerates heliotherapy, a second exposure may be given in the afternoon beginning with one minute and increasing it slowly to five minutes. In none of our cases have we exceeded fifteen minutes per day. In addition to the foregoing, silence is enjoined which is a necessary adjunct to the treatment.

In the absence of sunlight, ultraviolet radiation from the mercury lamp is used by reflection into the larynx. This will hold the process temporarily, but if sunlight is absent for several weeks, the lesion begins to progress as the mercury quartz lamp is not capable of holding the process stationary, neither is it able to bring about improvement in the average tuberculous larynx.

James Royden Peabody (in closing): I have little to say in closing except to thank the gentlemen for their kind remarks. I wish to partic-

ularly thank Dr. Miller for coming here and telling us about the success he has had with heliotherapy in tuberculosis of the larynx. It has been but a few years since we regarded laryngeal tuberculosis as a more or less hopeless condition, although there were early cases, as we know, that recovered by rest of the voice.

When I was in Colorado Springs, Colo., fifteen years ago there was a great deal of surgery being done for tuberculosis of the larynx, and especially around the epiglottis, both the cautery and the curette being used. Lockhard wrote a book on tuberculosis of the larynx—he is in position to see a great many more cases than we see in this part of the country—and his treatment was principally surgery. He reported some brilliant results, but in the hands of other men in other parts of the country, as Dr. Miller says, surgery has been rather unsuccessful.

Dr. Dabney spoke of the work of St. Clair Thompson. He is a very prominent man and has written a splendid text book on laryngology. He reported before one of the medical societies a case of tuberculosis of the larynx that had been cured by prolonged rest of the voice, and then astonished the members present by announcing the fact that the case he reported was his own case, that he had tuberculosis of the larynx and had been cured.

Referring to Dr. Miller's remark about tubercular otitis: We are sometimes unable to make a positive diagnosis of tubercular otitis. These children suddenly have a discharge from the ear without very much pain. We know that they are very low in resistance on account of existing tuberculosis, probably they are ill-nourished, and when infection occurs there may be a great deal of destruction of the bone. It is very difficult to cure these cases.

Like Dr. Barbour, I am very much opposed to the plan of opening and draining the mastoid for the cure of intestinal disturbances in children. Children with bona fide cases of mastoiditis seldom have any intestinal symptoms, and there are few cases in which mastoid symptoms occur in the course of intestinal troubles. In my opinion it requires a very enthusiastic or unscrupulous surgeon to subject a child to mastoidectomy unless there are legitimate indications for the operation, and intestinal disturbances alone would not seem to me to be one of these indications.

AFTER DINNER SPEECH BEFORE BELL COUNTY MEDICAL SOCIETY.

By O. P. NUCKOLS, M. D., Pineville.*

ANOTHER YEAR

Again we've met around this banquet board,
To toast away the passing year;
To greet each other as friend to friend,
And drink again the cup of cheer.

Another year has swiftly slipped through the
noose of time,
And history again has claimed its own;
And what e'er we've done in deed amiss,
May time with all its past our acts condone.

Then let's drop a clod around this passing year,
And leave it forever unto its fate;
Except to profit by the joys and deeds wherein
we've wrought,
Which for all our sorrows will fully compensate.

Our faces now to the future we with all our
courage turn,
To pitch our tent upon death's relentless battle
ground;
And every cause unworthy to our name we'll
spurn,
And work until the shouts of victory from every
hilltop doth resound.

I would like to say in parenthesis that after listening to the flattering words of introduction I think it nothing short of a real tragedy that we cannot live up to the full measure of our introductions and our obituaries. Mr. President, I want to say in the very beginning of my talk here this evening that I have both a word of congratulation as well as a word of sympathy to offer to our retiring president. I want to congratulate and at the same time thank him for his honest and impartial leadership, but he has had a rather hard task to perform here this evening and has had my sympathy.

My reason for saying this is that I am reminded at this time of the good old southern negro mammy who was entertaining some of her rather aristocratic friends one evening and was noticed to keep calling to one of her little boys and addressing him by the name of prescription. Every now and then she would call out to prescription to do this and to do that, until finally one of her visitors had her curiosity so much aroused that she asked the old negro mammy why on earth it was that she ever named one of her little boys prescription. Her reply was; "Why er the reason I call that er boy prescription is cause he is everlastin' hard to git filled."

So, my friend; Hoskins has had quite a number of hard prescriptions to fill here this evening and has had my sympathy; but as usual in his Chesterfield way he has done the job exceedingly well and I am sure to the entire satisfaction of all present, and I can answer for one of his prescriptions by saying that I myself feel very much like the old negro man I once heard of, who was suing for divorce from his third or fourth wife. When the Judge asked him the following question, "Rastus, are you asking for this divorce just in order that you may go and get married again right away?" Rastus said Ah, Judge Certainly not, I'se not goin to git married no more. If I gits this here divorce frum that ar nigger, I withdraws entirely frum circulation."

So after partaking so freely of this bountiful dinner I myself feel very much like withdrawing from circulation, but presume I will feel different a year from now.

I must confess, Mr. President, that I was at quite a loss to know just what best to talk to you about here this evening and I could think of no bigger nor better subject than that of the Bell County Medical Society itself, and you know we always like to talk about ourselves anyway.

It has always been a big subject but when we added another 150% to it two or three years ago by the addition of our better halves, we have now one of the biggest and best societies in the state, with a radio attachment. And with this new broadcasting attachment as an addition, I feel that we should now be heard from unto the uttermost parts of the earth.

To me it seems but yesterday since we gathered around this banquet board, but if we look up at the great clock of time we will see its massive hands pointing toward the late afternoon of 1926; and we find that another year has rapidly slipped through the noose of time, and we ourselves are speeding onward toward that bourne from whence no traveler ever returns.

We thoroughly enjoy these annual dinners with their renewal of friendships and also the renewal of professional obligations and allegiances. We also thoroughly enjoy the reminiscences of the past as well as the hopes and the allurements of the future; for it is ours to be social and professional friends, to work together, to play together, and sometimes to banquet together. And we should be exceedingly thankful and happy tonight, that none from among our ranks have been taken from us during the year, and that we have had a year of much good work and of reasonable prosperity.

For some of us the bloom of young man-

*Delivered before the Bell County Medical Society.

hood and young womanhood still linger as a fresh and fragrant flower which might just have been dropped into the lap of spring. For some of us the high noon-day of life has just been reached with its harvest of golden fruitage to warm and comfort the heart and the soul of ambition. For some of us the sun has just past the meridian and the shadows begin to lengthen and the way ahead seems to lead along the downward slope toward the valley where all is quiet and still and where every traveler soon falls asleep.

Soon my place will be taken by someone else; soon the places of us all will be vacant and the Bell County Medical Society of this day and of this generation will have passed into the hands of others unknown to us. So tonight with these forebodings and with these prophesies which will all too soon become realities, our message is, to let's enter upon another year with a hope and a zeal to do still better things; to help each other more, to love each other more, and to steep our souls with a tender and an abiding faith in each other, and in our profession and in the nobility of our work.

After all, the practice of medicine is an art as well as a science, and the most humble doctor may have a peculiar art in doing some things that would be a revelation and an eye-opener to some of the more highly specialized doctors. So it goes without question that we can all learn something by fraternizing with each other and by exchanging experiences and views upon the various topics that are brought out in our society meetings.

In this age of advancement when science has been able to send the human voice through the air to a million listeners, and when medicine has been able to bring under its control so many of the most death-dealing diseases, and has learned the cause and the means of prevention of so many of the more serious contagious and infectious diseases we may not stand in doubt about what may be accomplished in the near future. And the part we play, and what our medical society is in the years to come is just what we make of it; and we will get out of it just in proportion to what we put into it. If we do not attend upon its meetings and participate in its programs we will get nothing and will be entitled to nothing. Or if we become selfish and self-complacent and feel that we do not need the benefits which derive from our society we not only rob ourselves, but rob the society as well.

We have very just reason to be proud of our society, to be proud that there has never been the least smirch of dishonor attached to its name or to its history. We should be proud also of what we have accomplished in

the past and while we may not have so much in the lime light or in the glare and glamour of the medical world but among ourselves we have worked quietly and peacefully and have accomplished much that was good for us and for our profession. And I dare say that most of us have been in the practice of medicine long enough to remember when we had no organization of our profession of any consequence and were working along in a very chaotic way with no understanding among ourselves and every doctor jealous and suspicious of every other doctor and seeking to get any little advantage that presented itself. There was no understanding about fees and every doctor was a law unto himself.

Under such a regime there was neither pleasure nor profit in the practice of medicine and it did lower the dignity of an honorable profession for doctors to be casting slurs and criticising each other in the presence of their patrons. However, we may this evening congratulate ourselves that that day has passed never to return, and that by our medical societies and our more decent conduct toward each other we have made the practice of medicine pleasant and more profitable and have elevated ourselves in our own estimation and in the estimation of the public.

In concluding my remarks upon this particular phase of my subject, let me suggest that we be very careful of our thoughts, for in the loom of life thoughts are woven into deeds. Let us hope that the warp and the woof of our weaving may be mingled with high and holy aspirations, brave and many acts, so that the design we create may have the sign and the seal of divine approval. So tonight, my friends as we launch out upon another year, let us be fair with ourselves and take advantage of every opportunity of meeting together and helping each other and make our society one of the best in this or any other state.

I have thought that it might be of interest as well as some inspiration to us if we for the moment unfurl the scroll of time and take an x-ray picture, so to speak, of the practice of medicine during the last quarter of the 19th century. If we read that picture correctly we will look in vain for a known cause or cure of tuberculosis, typhoid fever, scarlet fever, diphtheria, hydrophobia, anthrax, yellow fever, diabetes, and a host of other diseases of great prevalence and of very high mortality. We also see surgery still in its swaddling clothes but as eager to invade every domain of the human anatomy as the most ardent bird hunter at the opening of the season.

In the most fashionable metropolis of the world we see that hard-working and very em-

inent French scientist M. Louis Pasteur, busy in the study of the cause and the cure of hydrophobia and anthrax and who soon announced to the world the cause and the means of prevention of these terrible maladies and laid the foundation for all the future study of the bacterial diseases.

Over in the German corner of the picture we see Dr. Robert Koch, a rather obscure country physician, busy with his microscope about him, and who by his careful and painstaking study soon startled the world by his announcement of the true cause of tuberculosis, by the discovery of the tubercle bacillus, and set in motion a crusade against this dreadful scourge which will eventually relegate it to the pages of history.

In staid old England was to be found Sir Almroth Wright digging away at his opsonic index theory and who soon announced the cause and the cure as well as the prevention of diphtheria by the discovery of his diphtheritic anti toxin.

In the near corner of the picture we recognize our own distinguished Kentuckian Dr. Ephraim McDowell of Danville, who had gained for himself world renown as the father of ovariectomy.

In the same corner of the picture we also see that scholarly gentleman, that poet laureate of the profession, Dr. Oliver Wendell Holmes, who by his brilliant discussion of puerperal fever aroused the profession to the scientific prevention of this terrible obstetric complication; and I dare say that no two men in the last hundred years have so graced the profession or have done so much for the welfare of womankind as have Drs. Holmes and McDowell.

This is just a slight glimpse of what is to be seen in the picture but is enough to show you that the profession was groping along toward the light of the torch held aloft by a few such men as those whom I have just mentioned. We fail to see in the picture scarcely any of the present day equipment either for diagnostic precision or for subsequent treatment; but today as we bask in the sunshine of the day that was then just breaking, we take off our hats and bow in humble abeyance to the Daniel Boone's of the profession of that day who were then blazing the way through the wilderness of ignorance and superstition and to whom we cannot do too much honor for laying the firm foundation upon which the whole superstructure of medicine has been built.

It has oft been said that the doctors of that day were inclined to be very pompous and proud, and especially the city doctor who drove about in his one-horse phaeton with much the gusto of a king, while the country

physician either rode upon his flea-bitten grey or perhaps traveled in his one-horse shay. But times have changed, that day has gone, the doctor of today either drops down from out the air or lights upon the doorstep from his big automobile, x-rays his patient, pocketbook and all, and treats accordingly.

The surgeon has arrived, and has invaded all the human anatomy that has not previously been cut away and has performed the greatest mathematical feat known to all history.

The modern chemist tells us that the estimated cost of the constituents of an ordinary human body, which can be purchased at any corner drug store is only 98c and still the surgeon can cut away a little tag here and a little tag there and charge from \$150 to \$500 for it and still make the patient think he has given a great bargain.

Just what is in the near future, to even make a wild or fantastic guess, would tax to the limit the most imaginative fancy.

With the rapid growth and development of the x-ray until you can cure anything from an ingrowing toenail to a bruised conscience, if there be such a thing, and with every imaginable thing relieved by some form of light treatment, with the one possible exception of the skeleton in the closet, in which case the light treatment is very dangerous to use. And with the rapid growth of the use of electricity in medicine, we need not be surprised to see the human machine almost entirely run by electricity, and your after-dinner speaker turned on and off by simply pressing a button. And I fancy that I can see from the expression upon your faces that you very devoutly wish that that day had already come.

But seriously my friends the practice of medicine in its truest sense is of all professions with the possible exception of the ministry, the most altruistic and humanitarian, and the distribution of worldly honors the most uneven and unjust.

The great military general arrayed in all the habiliments of war, and bedecked in his glittering uniform and mounted upon his gallant steed can lead the very flower of young manhood to an untimely and an unequalled for death and send his name down through the annals of history as one of the great, and have his last resting place marked by some towering monument of granite or of bronze; while the hard working and kind hearted physician who sacrifices every personal comfort for the welfare of his patient, who saves life, and who brings joy and happiness into the home, ah, too often goes down to the tongueless silence of the dust unwept, unhonored, and unsung.

But I declare to you tonight when I think

of the Napoleons, the Caesars and the Alexanders, and when I think of the widows and orphans they have made, of the oceans of tears and rivers of blood that have been shed for their glory, I feel that I had rather have been the most humble and obscure physician in all the land; living in a three-room cottage, with my family about me, and a single vine trailing above the door and a few flowers growing purple amid the amorous kisses of an autumn sun than to have been the most distinguished military despot that ever raced across a battle field.

When all is well and the bloom of health rests like a blushing rose upon the cheek of every member of the family, then the doctor may take his place among men and for the time become one of the common herd, but when sickness comes, when the clouds of despair hover about the home, when life itself hangs as it were by an invisible thread suspended from heaven; it is then that the doctor crosses the threshold of the home as the uncrowned ambassador of good will and becomes the physician, friend and counsellor of every member of the family.

And I say to you tonight that the life and influence of the true physician cannot be put into words, or coined into fine phrases, neither can it be painted upon canvass nor chisled on stone, but it rather engraven upon the hearts of those to whom he administers.

So I say to you my friends of the medical profession, let's continue to sow many of the seeds of human kindness and good deeds along the highway of life, so that after awhile when the frosts of many winters have seared our locks and our step has become unsteady and infirm, when the sun sinks low in the western horizon and the sombre shadows fall across our way, we may then in the very evening of life go forth into the garden of the past and gather unto ourselves many of the beautiful and fragrant flowers of memory. And with these garlands of tender memories entwined about our hearts we can then walk in peace and serenity down to the end of the way; lay our hand into the hand of that great physician, our pilot, step into our little bark, and sail out into the great ocean of eternity.

That immortal Scottish bard, Robert Burns, said:

A man may drink and not be drunk,
A man may fight and not be slain;
A man may kiss a bonnie lass,
And, aye, be welcome back again.

And now my friends I hope that we may all live through the coming year, and have a year of much good work and of reasonable prosperity and at its close around the banquet table of some other retiring president be welcome back again.

THE TREATMENT OF SYPHILLIS.*

By B. W. WHITFIELD, M. D., Harlan.

The object of this paper is not to discuss the diagnosis of syphilis but to try to present in a very general way the treatment of this disease from the general practitioners standpoint.

At best, the treatment of syphilis is unsatisfactory, as the disease and drugs are but little understood, and because of the inconsistency of the patient in following treatment.

The treatment as outlined in many text books is inadequate, and perusal of older and newer books will show that experience of the leading syphilographers has caused many changes in their treatment from time to time. Many doctors treat a man for a year or two and later see healthy children born, and think the man is well, when later cerebral symptoms manifest themselves.

In using remedies to combat syphilis, it should be borne in mind that whatever drugs are used should be pushed to the physiological limit. The drug should be given in as large doses as the patient can tolerate without interfering with his general health. Throughout the entire time of administration of any drugs to the patient, the patient should be regularly and carefully observed so that one can immediately note any signs of breakdown in the general physical condition.

First of all, I think that syphilitics should be told very frankly what their disease is and explain to them the dangers of the disease. Also, try to get a history of the infection—especially in a primary affair—and try to get those of the family or household who are likely to be infected to present themselves for examination—and treatment if necessary. For you can see the fallacy of treating one and leaving an untreated partner to reinfect the patient just as soon as treatment is abandoned.

Treatment depends upon the kind of syphilis that one has to treat. We may arbitrarily classify it as:

- (1) Very early chancre or sores that are under one week old.
- (2) Sores that are over one week old with spirochete positive and blood Wassermann negative.
- (3) Sores that are over two weeks old and secondarily syphilis.
- (4) Old and latent cases positive Wassermann but few or no clinical symptoms.
- (5) Nervous syphilis.

Most cases have primary lesions and secondary symptoms, but some cases of syphilis never have primary lesions. Some never de-

*Read before the Harlan County Medical Society.

velop secondary phenomena. These secondary symptoms may disappear spontaneously.

1. Cases of one week and under: It is thought that there is a diffusion of spirochetes throughout the body before the chancre appears, though "saturation" is not complete until the secondaries break out.

This seven day limit is purely arbitrary because some individuals are more resistant to the infections than others, and the spirochetes may be more virulent. Some extend the limit of this group to fourteen days.

These cases are absolutely and permanently curable with small amount of treatment. It is thought by some that within six hours after administration of 606 spirochetes are killed with two decigrams of the drug.

Start these cases off with the arsphenamines. There are certain advantages of arsphenamin over the neo-arsphenamin, but on the other hand there are advantages neo-arsphenamin has over arsphenamin in that there is:

- (1) The greater ease of preparation.
- (2) Less damage to tissue.
- (3) Less toxic.

For these reasons it is recommended to the general practitioner in preference to arsphenamin. Sulphoarsphenamin probably has a great spirocheticidal action as it has a slightly higher arsenic content than neo, but a lack of experience with it prevents me from recommending it except in cases which are not suitable for intravenous medication.

These are very powerful and toxic drugs, and sometimes irrespective of the size of dose some individuals are susceptible to from mild to severe toxic reactions. Also, different lots of drugs sometimes differ in reaction.

Unquestionably, most of the complications laid at the door of arsphenamin are due to errors of technique. Briefly, and in order of their frequency these errors are:

- (1) The use of water that contains saprophytic bacteria.
- (2) Oxidation of the drug.
- (3) The question of hypo and hypertonicity of solution.

For 150 pounds body weight, give 4 to 4½ decigrams of neo-arsphenamin as an initial dose. But has this a real curative action? The original idea of Erlich, that with 606 one should be able to produce a complete sterilization of the body is known to be fallacious. Can this sterilization be obtained by increasing the number of doses or by increasing the size of the doses? Opinion on this is divided, but one point is established, and that is, if we are going to obtain an immediate sterilization the drug must be administered early during the period of the chancre. With late administration the number of cases immediately

sterilized or radically cured decreases rapidly.

The time of the repetition of the dose is not known, but from five to seven days is generally admitted to be the length of time between doses. The second and third dose is six decigrams at weekly intervals. Some are cured at this stage, but it is safer to give the fourth dose two weeks after the third (arsenic being stored up in the tissue). The fifth dose after an interval of three weeks from the fourth dose, and the sixth dose of six decigrams four weeks later.

These cases are thought to be cured with this treatment. However, if one is not satisfied with a cure here, mercury may be given during the intervals of 606 if the patient is carefully watched.

Group 2: Cases over one week old, but under two weeks with positive spirochetes but negative Wassermann:

These cases are probably not cured with 606 alone, and are best treated with a continuous treatment of mercury and arsenic. Begin treatment with Neo, and give six doses at weekly intervals. On the seventh week begin mercury and continue for four weeks, then on the eleventh week use Neo again for three doses a week apart. On the fourteenth week another four weeks of mercury—on the eighteenth week Neo again for two doses, twentieth week mercury for four doses and on the twenty-fourth week one dose of Neo.

Make blood and spinal Wassermanns at the end of the course; if positive blood, treat as latent syphilis; if spinal fluid is positive treat as neuro syphilis; if both are negative discontinue treatment, but make Wassermanns every four months for three years afterward.

Group 3: Covers cases with chancre two weeks old or over, and secondary syphilis.

These are not cured with 606 alone and will show positive Wassermanns after three years, when up to this time they have repeatedly shown negative Wassermanns.

The treatment of these cases is divided into periods of treatment and periods of rest; because it is thought that the spirochete establishes a tolerance to the drug, and becomes drug fast with continual treatment.

The period of treatment runs from 4 to 8 weeks, and the period of rest 4 to 6 weeks.

During the treatment period you may give salvarsan or mercury, the latter by needle or by inunction. Mercury by mouth is no good here.

Iodides should also be given, but it should be remembered that their action lies only in allowing the drug to reach the imbedded spirochete. Give the iodides during the periods of rest or if the kidneys are good they may be given with the specific drug.

You may start treatment with mercury,

but where it is possible it is better to start with 606, and this is usually given a week apart for from six to eight doses. Isolated doses of 606 now and then are mentioned only to be condemned.

After this battery of 606 a rest of from six to eight weeks, or as mentioned above, iodides may be given during the time. Then mercury either by needle or innunction is given for six to eight weeks. If by needle either the soluble or insoluble salts, but the soluble salts are to be recommended as a weekly injection into the buttocks as insoluble salts soon drive the patient from treatment. The soluble salts are given from daily to bi-weekly, depending upon the mode of administration and the physical condition of the patient.

These periods of treatment with mercury and rest are carried out for six to eight months before another battery of salvarsan is given. You will not get results if salvarsan is given weekly over a long period of time as the spirochete becomes immune to arsenic, and remains so.

It is not to be forgotten that mercury is also spirocheticidal. In fact, probably no case of syphilis of this and later stages is cured without mercury.

The above outline is to be kept up for at least two years. There is no need of taking a Wassermann hoping for cure, for there are no cures before this time, although of course the Wassermann may be negative from almost the beginning of treatment. This will stop the early secondaries, but full grown secondaries will require three years of treatment. These cases should have a round of iodides at least every third round of treatment.

Bismuth is used in the treatment of syphilis and is thought to have a particular advantage in the treatment of the drugs fast and Wassermann fast cases, and may be tried in cases that become Wassermann fast, but lack of experience prevents me from giving it more than a casual mention. Probably time and experience will place it along with arsenic and mercury in the treatment of this disease.

In beginning the iodides it is probably best to start with five drops t.i.d. increasing one drop each day and watch the patient for ill effects. If none, on the second round start with 15 to 20 drops t.i.d. and try to increase to sixty drops t.i.d. but do not push high dose. If not well tolerated get the maximum dose that the patient can take and keep this up. Don't be afraid of a few minor symptoms but watch thyroid and heart. Have patient return once a week for observation during this period.

Will all cases of the above be cured in three years? No. Have Wassermans made at four month intervals to see if they ever run

positive. If positive must continue treatment, if negative may later become positive. If negative for three years afterward (blood and spinal) you can feel that a large percentage of cases are cured.

Group 4. Latent and old syphilis:

We see many of these cases as gumma of the liver, osteitis, periostitis, etc. Treat these cases as the second group, but they are much more difficult to cure, and it takes longer to cure—from four, five to seven years of treatment. In many cases it is probably better to start on a combined treatment of mercury and iodides before administering a course of 606. Particularly is this true in cardiovascular nephritic cases, then arsphenamin should follow in small doses, and then watch your patient closely for ill effects of the drugs on these organs and especially for nephritic changes.

In the treatment of congenital syphilis of children the above course may be used, but these little fellows often present complex problems. Perhaps here is one place where oral administration of mercury may be used with some advantage as in the form of mercury and chalk combined with Dovers powder given two to three times daily. Sulphoarsphenamin is a valuable preparation here because of its ease of administration.

V. Neuro Syphilis:

Permit me here to digress a little and to briefly go into the diagnosis of neuro syphilis.

Assuming that involvement of the cerebro-spinal axis sometimes occurs in the first few weeks and frequently within the first year of the infection the value of an early diagnosis of neuro syphilis is of paramount importance.

Many cases present definite symptoms to the Neurologist, which are frequently misinterpreted by the general practitioner, and since the only hope toward permanent relief lies in early diagnosis and adequate treatment, it is imperative that all cases of early syphilis be given the advantage of a spinal puncture and a neurological examination during the first year of their infection. Neuro syphilis is often overlooked by the general practitioner because of lax examination methods, and the prevalent belief that all nerve involvement comes late in the disease. In some cases, however, it does take years for definite pathological changes to take place when nerve involvement is so pronounced that we have the so-called "text-book" pictures of late syphilis; but unfortunately the patient must then be classified as incurable.

The only practical method to avoid latent syphilis and its sequelae is for the general practitioner to regard each patient as a potential neuro-syphilitic and by careful observation, and frequent examination look for the

early symptoms of cerebro-spinal syphilis. Briefly, this means—first, a diagnostic spinal puncture irrespective of all blood Wassermann reports. Long before any clinical manifestations may be elicited, pathological changes may be present in the spinal fluid, as increase cell count, positive globulin, characteristic colloidal gold curve, Wassermann and other indications.

Those cases with only a slight deviation from normal present a difficult problem for diagnosis and frequently tax the ability of our best consultants. However, if we are to wait until degenerative changes have occurred, it is then impossible to give more than a palliative relief.

Secondly, we must look for evidences such as tremors, abnormal pupillary behaviors, changes in speech and gaits, evidence of psychosis and mental derangement, deafness due to auditory nerve involvements, changes in superficial and deep reflexes, constitutional changes such as myocarditis, aortitis, anaemia, etc. All symptoms which patients describe as rheumatism, neuritis, headache, dizziness, insomnia, impotence, may mean lues. Pain in the epigastric region often diagnosed as renal colic or gall stones may be the gastric crisis of early tabes.

The spinal puncture performed by one of ordinary care is not attended with great risk, and should be insisted upon in all cases of early syphilis. Without the puncture you are working in the dark and no case should be dismissed without one.

Bear in mind Osler's oft repeated warning, that syphilis may imitate anything in medicine, and that each and every symptom presented by our patients may be the clue that permits a definite diagnosis. Once the diagnosis has been made, there should be no delay in instituting treatment. Procrastination here may spell irreparable damage to important nerve tissues.

The treatment of nervous syphilis should be left to the man who handles nervous syphilis, but as general practitioners it often becomes necessary to handle these cases. There is no plan suited for all cases of neuro syphilis. However, a complete record of laboratory data should be kept, not only to make the diagnosis more certain but for comparison in the future.

Arsenic is a valuable drug but is much debated in its use here, because of its action on the nervous tissue and if used, be guided by the resistance of the patient. May begin with a small dose and gradually increase, watching patient closely for ill effects.

Tryparsamid is used in some clinics, but is mentioned only to be condemned to the general practitioner unfamiliar with its use.

Mercury is as valuable as salvarsan here, and by inunction is probably better than by needle. Many neurologists have adopted the combined treatment of salvarsan and mercury.

Iodides are especially valuable in the treatment of these cases. While admitting they are low in spirochetidal power, one must concede the useful quality of iodides in causing the absorption of inflammatory products resulting from microbial activity.

It is not advisable that the general practitioner undertake any form of intra-spinal treatments. Saturation of the patient with iodides and the use of mercury and arsphenamin are calculated to combat the symptoms, clinically and serologically, of neuro syphilis. Whatever plan of treatment is adopted—and you will probably vary in each patient from time to time as your judgment indicates—continue treatment until the spinal fluid becomes negative or until the patient quits or dies.

Course and progress of syphilis: Syphilis may seem to be cured then in after years break down with cerebro spinal symptoms. In cities the percentage of infected individuals may run from 25 to 40 percent.

Progress of syphilis:

- (1) Recover? Very small percent.
- (2) Relapsing cases. Sometimes 30 to 40 years afterward; break out again.
- (3) Latent. Seem cured but die syphilitic but not of syphilis. Serological syphilis.
- (4) Nervous syphilis.

From the foregoing it may seem that one has to but follow a general routine that I have attempted to outline, but the treatment of each patient must be fitted to the individual and not the individual to the treatment. Some patients need intensive treatment, others will progress better if not treated intensively. Others things being equal, however, provided the general physical conditions of the patient is good, over treatment is preferable to under-treatment.

A Wassermann should be taken in every case before commencing treatment and in the absence of positive Wassermanns or positive dark field examinations, except in instances where the clinical picture is distinctly that of syphilis, no antisymphilitic treatment should be administered. The treatment of non syphilitic patients on suspicion is not justified.

BACKACHE.*

By JOEL E. GOLDTHWAIT, M. D., Boston, Mass.

The subject of the discussion which we are to have together this afternoon was chosen since it represents the most common symptom for which patients seek advice the understanding of which is apparently not fully understood by the majority of the members of our profession. By backache, as the term is used today, we mean pain referred to the lower part of the back from below the shoulders down to the hips. Nine-tenths of all the cases of pain referred to the spine or back will be referred to this region and because of that the discussion is narrowed down to this special portion of our anatomy.

In the first place it is apparently agreed, by all those who have studied the symptoms with much care, that the symptoms cannot be due very commonly to gynecological difficulties, that they cannot be due very commonly to medical conditions, that the kidney rarely is responsible for symptoms which are referred to the back although "kidney pain" is commonly an expression used in these cases, but that most of their cases are due in some way to mechanical conditions which can be commonly relieved if the following features are understood. The more this type of condition is studied, the more obvious it becomes that most of the cases are due to mechanical causes, are not primarily inflammatory and are therefore commonly relieved by mechanical measures. In order to understand the condition it is necessary at first to appreciate the great variation in structure that exists with members of the human family. The slender type of individual with the small vertebrae, flexible spine, naturally has a potential of mechanical difficulty that would be quite different from the heavy type of individual with the large vertebrae, with the inflexible spine, while in between there are almost endless variations. Not only are there the varying types which can easily be shown with the x-ray films, and which it is my privilege to show you this afternoon, but the structure of the vertebrae in the individual case varies so that potentials of mechanical strain that are entirely different from those commonly to be expected are present. The articular processes in the lumbar spine, according to the text books, are supposed to be crescentic so that the articular processes of the vertebrae above should rest in the crescentic articulations of the vertebrae below, a true mortise type of joint being formed. While this is true in a certain number of individuals, nevertheless it is by no means the common

condition, and the variations that one has from this are almost endless. The slender type of individual commonly has the flat articular processes, one overlying each other more as the processes are shaped in the dorsal spine, only the individual articular process is much smaller than occurs in the dorsal spine. Not only this but the articular processes, if they are crescentic, or if they are flat, do not always have the same axis. For instance, as is shown by these films, the crescentic articulations should naturally be formed so that the mortise type of joint should have a vertical or perpendicular axis. This naturally allows motion forward or back as far as the mortise is expected to go without difficulty. With some of these cases, as I am showing you here, the axis of the joint is oblique so that the articular processes of the vertebrae above incline downward and inward, naturally locking into a similar wedge-shaped type of articulations below. This naturally limits extension of the spine and makes possible a condition of strain that is not difficult to imagine. Still further in some cases the articular process on one side is crescentic, on the other side is flat, so that the motion in side bending is different. In still other cases the transverse process of the last lumbar forms a true articulation with the top of the sacrum, a condition which may be present upon both sides or which may be present upon one side, this not only modifying the motion that would be expected in the low back but introducing another joint or two joints if the condition is present on both sides, not commonly described in the anatomies at all, but a joint which, because of its position, is liable to strain under very slight twist or injury. Another variation frequently seen is the peculiarity in the shape of the spinous processes, some being long, some being short, some being thick and some being thin, these, of course, interfering with or modifying the amount of motion to be expected in the spine in the given case. In connection with this the shape of the sacrum varies very greatly. Some are small with very small and loosely made articulations with the ilia. Others are broad and heavy, with large articulations. With the slender type of individuals, with the small sacrum, a common position assumed is with the pelvis tipped forward so that the weight of the body is thrown upon the sacrum when the sacrum itself is much more nearly horizontal than it should be. This results, as one can easily understand, in strain of the small loosely attached sacro-iliae joints, with the pain referred to the leg, with interference with the pelvic viscera, etc., etc. With the heavy type of sacrum and general anatomy, the strain of the sacro-iliae joint is very much less com-

*Read before the Kentucky State Medical Association, Frankfort, September 21, 22, 23, 1926.

mon and, as a rule, great violence is required in producing it.

That which has been stated thus far has to do with the anatomy and with the symptom of pain as it applies to the low back from the midlumbar region through the pelvis. When analyzed the general locations of tenderness in these cases will be over the sacro-iliac joint where the joint can be palpated at the top of the great sciatic notch. The other over the lumbo-sacral transverse point which is over the articular processes of the last lumbar vertebrae just inside and above the posterior superior spine of the ilium. This latter position is probably the most common point for reference of pain in all the cases.

The next common point of reference of pain and tenderness is in the upper lumbar region at the side of the spine, in the loin, the so-called "kidney" pain. This is commonly referred to the region at the side of the spine over the tip of the transverse process of the first lumbar vertebrae or over the last rib, the pain in these cases being commonly due to the sagging of the ribs so that they rest upon or are caught over the tip of the transverse process of the first lumbar, with the resulting pinching of the intercostal nerve. The pain in these cases varies from slight aching to most intense, acute suffering and which in many cases is thought to be due to a renal calculus. The fact that these patients are relieved so easily by proper mechanical measures which, of course, are applied with the purpose of lifting the ribs away from the transverse process and the fact that the patients themselves have usually found positions of comfort when lying down, makes it quite obvious that these cases have practically nothing to do with the kidney function and are purely local mechanical conditions.

To understand this type of case, the variations in the anatomy must also be studied because not only do the transverse processes at the first lumbar vary very much in their length and general shape, but at times there are rudimentary ribs on the last thoracic vertebrae or the ribs at other times are very long, they may be short on one side, long on the other, they may droop more upon one side than the other, so that the differences in the anatomy in this region carry with them a greater potential of symptoms than perhaps occurs in the low back. In all of these cases once the attempt to explain the condition is approached with the idea of the anatomy first and then will take understanding of the mechanics of that part of the body, most of the cases become understandable and relief is possible as a rule, without drugs, with ultimate slight, if

any, difficulty once the body is properly adjusted so that its special structure can be used without harmful strain.

Remember that the special manipulations which are so frequently carried out many times relieve the symptoms but rarely do they cure because they have not really corrected the faulty mechanics but simply temporarily relieved the condition. The same is true with drugs, the pain may be relieved or smothered by a drug but the real cure is not to be expected until the parts of the body are so used that the full range of motion is possible without mechanical interference.

In all cases of pain referred to the low back, it must be remembered that while the purely mechanical features are responsible for the symptoms in most of the cases that, nevertheless, if a faulty use of the part is kept up for a long time, weakness of the joints with ultimate true arthritic changes inevitably results and requires such treatment as an arthritic condition would be expected to receive, but even in these cases the correction of the faulty mechanics that made the arthritic condition possible, must naturally be accomplished first. With such a general understanding of the method of study of such cases, the majority of the patients as they come to you complaining of backache, will be easy to relieve and are capable of ultimate cure if you realize that not only must the local condition be treated but the body ultimately developed so that it will be used splendidly erect, with the muscles in proper balance and not with the body relaxed and sagged as is almost always present in these cases. The treatment of backache, if these general features are understood, becomes the easiest and simplest thing imaginable and when the profession, as a whole, realizes this, the regular profession will be made more and more responsible for all that is involved in this type of case. The special anatomy, or the structure of the individual, should be determined first. The special function, or the physiology, that should be expected with that particular individual, should be considered next and with these two elements ultimate health and well-being should be the expected prognosis in almost all of these cases.

ABSCESS ABOUT THE RECTUM.*

By H. A. GILLIAM, M. D., Bardwell.

To quote from Mummery: "Abscesses in the peri-anal region are not at all uncommon and may occur in a great variety of forms, and as the result of many different conditions. Except in relation to their situation, they differ in no important particular from abscesses in other situations. They are chiefly of importance because they very frequently result in the formation of fistula."

As to bacteriology: a great variety of organisms are usually found. *Staphylococci* probably plays the most important role and is probably the variety most constantly present; although the colon bacillus is found nearly as often, it is very likely secondary in most cases; it is practically always present in the colon, and is discharged in great numbers with the feces. Consequently, the peri-anal region is contaminated by their presence at nearly all times. Therefore they are always on hand, and ready to mix things on any occasion. A great variety of other germs may be found in abscesses of this region, and really it is impossible many times to designate the etiologic organism. The gas bacillus may be present, and by the escape of gas, lead one to suspect a communication with the bowel, when in fact it does not exist. When the organisms of tuberculosis are found, their presence can very often be explained by a focus in some other part of the body. As to the percentage of abscesses in the perianal region that are primarily tuberculous, is at present an unsettled question—good men holding to each extreme. Anyhow, it seems to me that there must be a larger percentage primarily tuberculous, than is conceded by some authorities.

As already stated, abscesses in this region are very prone to result in the formation of fistulae. It is claimed by many very good authorities that sixty to eighty percent of all fistulae are tuberculous, as can be proven by biopsy. Stewart of New York thinks that between sixty and seventy percent are tuberculous. Howard thinks that about seventy-five percent of them are tuberculous. Now if this be true, it proves that a large percentage of abscesses in the peri-anal region are either primarily tuberculous, or become so secondarily. I do not think this high percentage will hold good for all sections of the country, because we have some good men who think not more than ten percent may be tuberculous.

I do not think that patients who show quite unmistakable signs of tuberculosis are any more apt to have abscesses in the peri-anal

region than those who do not show any signs of tuberculosis. There is a class who show a greater tendency, and this will be found true of the diabetic and of the nephritic. The urine of all patients who show tendency to abscess in this region or anywhere else, should be examined in order to exclude the presence of diabetes or nephritis.

The cause of abscesses in this region, is nearly always due to an abrasion or break in the continuity of the skin or mucous membrane, thereby letting in organisms which are always present, and ready to invade the tissues. Abrasions may be caused by numerous things or conditions, such as seeds, fish-bones, or any hard sharp substance passing with the feces. Fissures and hemorrhoids are prone to cause abscesses. Abscesses sometimes follow as the result of operations about the rectum. This part of the human anatomy seems to enjoy a certain amount of immunity to infection, over any other; otherwise it would be truly dangerous to do any sort of work in this region. This, however, is no excuse why one should not practice asepsis in this region, the same as if he were doing an abdominal section.

Abscesses may be classed as to the part or region affected: thus; we have abscesses of the skin, which differ in no respect from abscesses of the skin anywhere. These are called cutaneous abscesses. They may be very small, or large, or partake of the nature of carbuncles, when several small ones coalesce. Their cause may be due to irritating discharges from the anus, or vagina, or to uncleanliness, friction, sweating, etc. Their treatment is borie acid lotions, ammoniated mercury ointment, and incision. On this type, autogenous or stock vaccine seems to have some influence. Tonics, of course, should be given in this type, as well as in all others.

Then we have subcutaneous abscesses, which is the type most often encountered. They appear beneath the skin around the margin of the anus, and may burrow in any direction. This is the type that is responsible for the greater number of fistulae. Its cause is much the same as encountered for cutaneous abscesses, plus a possible extension through the lymphatics from source in this region, or more or less remote. They may develop very rapidly, and pus may form within twenty-four to forty-eight hours from time of onset. Symptoms may be very slight, or severe, with fever, chills, aching, and severe pains about the rectum or sacrum, radiating to the bladder and urethra interfering with urination, or extending into the hips and down the thighs. This last symptom is more especially marked if the abscess has burrowed up toward the bowel and beneath the mucous mem-

*Read before the Carlisle County Medical Society.

brane. The patient will assume a characteristic attitude when he sits down, usually sitting on the edge of the chair, or throwing himself over on the well hip, elevating the pelvis on the affected side. Inspection may show nothing; anal region looking normal or nearly so; or you may see a reddened swelling located on one or the other side of posterior commissure, or possibly the anterior, though they are most usually near the former. They are very tender; so much so, that digital examination per rectum is difficult. If you succeed in getting a cotted finger in the rectum, you will feel a rounded, indurated, or doughy swelling beneath the mucous membrane, which can be grasped between the internal finger and the thumb outside. Its side and extent can often be determined only in this manner. On account of the intense pain, you may have to give your patient a little gas, or light anesthesia, and at the same time take care of any operative procedure necessary. Abscesses of this type may best be taken care of under local anesthesia; making a free opening, trimming away the margins of skin, swabbing with pure phenol, and then iodine, and putting in a light gauze drain to keep margins of skin separated. All communicating pockets must be broken down, and cavities converted into one. Subsequent treatment consists in antiseptic irrigation with occasional stimulating application if healing is sluggish.

There is another type that develops within the anal canal or rectum just beneath the submucosa. Its cause is much the same as enumerated for the subcutaneous type. Germs entering through the mucosa as the result of trauma by some foreign abrasive material, or by operations, or careless or awkward insertion of syringe nozzles, or possibly through areas of ulceration. As a result, extension through the lymphatics may also happen. Their location may be anywhere within the rectum, and when located anteriorly, seriously interfere with urination, catheterization at times being necessary. Symptoms may develop quite suddenly, with fever, chills, aching and throbbing about the rectum. Pain may be quite severe and will be especially so, if more or less within the grasp of the sphincters.

Diagnosis is usually easy, the abscess being felt by the well lubricated index finger gently inserted in the rectum and swept around its walls. The abscess will be felt as a smooth rounded mass, more or less indurated, or doughy and soft, perhaps fluctuating; depending on the duration of the process. When located anteriorly, in the region of the prostate, it may be difficult to differentiate from abscess of this gland. Inspec-

tion of the anal canal and rectum through the anoscope will aid materially in diagnosis.

These abscesses may burrow, or extend to subcutaneous tissues near or beyond the anus, forming a submucocutaneous abscess, finally resulting in a complete fistula. The submucous variety often results in blind internal fistula when allowed to open spontaneously.

Treatment of this type, consists in free incision, extending down through the lower margin, swabbing with phenol and mereurochrome and packing with strip of iodoform gauze, which is allowed to extend through anus. This is to be done under local or general anesthesia, under strictly aseptic surroundings. If local is used, the sphincter is anesthetized to relaxation with 1-2 percent novocain, or 1-8 percent butyn. A Sims or bivalve speculum is then inserted and anesthetic solution injected along line of incision. After waiting about two or three minutes, the abscess may then be opened without pain. After care consists in irrigations with saline or Dakin's solution, 1-4 of one percent, and local applications at the same time preventing bridging over before healing at the bottom. Patient is allowed up, to promote better drainage.

One of the most serious types of abscess that forms in this region is a type called ischio-rectal abscess. It forms in the ischio-rectal fossa, which is bounded above by the levators, and below by the obturator fascia which cover the internal obturator muscle. Abscesses forming here on one side, may extend around and behind or to opposite side of the rectum. They often attain immense proportions. One which came under my care very recently, contained over a pint of pus. They usually form rapidly, but may be weeks or months in developing, as did the one in the case just referred to. It showed its first definite symptom in October, 1925. The patient came under my care the last of March, this year. There had been no discharge of pus at any time. The patient's main symptom being pain in sacrum and right hip, slight fever, general aching at times. Constipation was marked. There had not been much loss of weight. When patient sat down, she sat on the left hip and on the edge of the chair, assuming the characteristic sitting posture which is common to all abscesses in this region. In general, the subjective symptoms in this case were very mild, and from the standpoint of duration, were rather misleading. Inspection of the peri-anal region showed nothing except that the right buttock was somewhat larger than the left, and a little more dusky. Digital examination was not especially painful. A boggy mass bulging into

the rectum and extending higher than my finger could reach, mostly on the right side, but extending around to the left, could be easily made out.

I operated on this patient under general anesthesia, making a free incision a little to right of posterior commissure, trimming away the margins of the skin, so as to prevent early closure, swabbed the cavity with pure phenol, followed with iodine, and inserted a light drain. It has taken many weeks for this cavity to fill in. At the present writing there is a small channel 3-4 inches deep which may require a little more operative procedure before it finally closes. But as it is slowly growing smaller I think I will let it alone for a while yet. Whether it is tuberculous or not, I am unable to say; I am a little inclined to the belief that it is, though there is no evidence of the fact elsewhere.

Usually the symptoms are marked and acute, with all signs of sepsis. Pain will be severe in the sacrum and may extend down the thigh to the foot. Diagnosis is made by inspection, which usually shows swelling and discoloration by palpation and by digital examination per rectum, by which means you will be able to outline a boggy or doughy mass bulging against the rectum on one side or the other. If of long standing it may extend around the rectum on both sides and back.

Treatment of this type is very much the same as for the others: that is, early and free incision with trimming away of skin margins, and insertion of light gauze drains. Irrigation with saline or mild antiseptics should be done daily, in order to promote healing, and for cleansing effect. Wounds in this region are prone to develop putrid odors unless carefully cleansed daily.

It takes many weeks, and sometimes months for a large ischio-rectal abscess to heal. The patient's vitality may become seriously impaired. It is much better that free incision be made early, even though no pus be evacuated, than to wait for fluctuation. By the time you are able to detect fluctuation there has been burrowing, and channels formed, with destruction of tissue that will take a long time to heal.

It is claimed by some that it is better to do a radical operation for abscess in the perianal region at the first sitting: that is, do a complete radical operation for fistula at the time you take care of the abscess. In certain cases, this might be indicated, especially where time is all important; otherwise I think it wise to open the abscess, get it to heal if you can, or as much as you can, and then if fistula forms, do radical fistula operation at a later date. There will be less mutilation, and less danger of destroying the function of

the sphincters. I think it better to be conservative in all work about the rectum. It is a very much neglected and abused part of the human anatomy. Treatment of diseases of the rectum is no more distasteful than of some of the other orifices of the human body. If one will only give it the time and thought due it, he will find the treatment of rectal diseases very interesting, as well as enlightening.

BOOK REVIEWS

A MANUAL OF PHARMACOLOGY AND ITS APPLICATION TO THERAPEUTICS & TOXICOLOGY. By Thorald Sollmann, M. D., Professor of Pharmacology and Materia Medica in the School of Medicine of Western Reserve University, Cleveland. Third Edition; entirely reset. 1184 pages. Philadelphia and London; W. B. Saunders Company, 1926. Cloth, \$7.50 net.

The book has been reset from cover to cover. It had to be! First, there was the new revision of the United States Pharmacopeia. This necessitated a thorough review of the preparations, making them conform to the new standard and changing the nomenclature and spelling accordingly.

Then, the accelerated pace of pharmacologic investigation has brought into therapeutics many essentially new drugs, such as insulin, ethylene, parathyroid hormone. In many subjects, such as the autonomic system, chemotherapy, lead poisoning, etc., new conceptions have come forward. All these changes necessitated a virtual rewriting of the entire book.

As the work is planned to be of use in clinical medicine, that information which has a direct bearing on the practice of medicine has been put in the larger size type, while data of less frequent use has been relegated to a smaller-size type.

The bibliography remains a distinct feature of this book. It has been revised and some 1200 new titles added. In the Appendix will be found a check list for the study of important preparations and a tabulation of average doses.

PRACTICAL MATERIA MEDICA AND PRESCRIPTION WRITING, with Illustrations. By Oscar W. Bethea, M. D., Ph. G., F. C. S., Professor of Clinical Therapeutics, Tulane School of Medicine Chief of Medical Staff Southern Baptist Hospital (New Orleans).

Fourth Revised Edition. F. A. Davis Company, Publishers. Price \$4.50.

In the Fourth Edition this work has been made to conform to that of the U. S. P. X. This has necessitated the addition of much new material and many changes have been made in matter relating to drugs which were formerly included.

WOMAN'S AUXILIARY NOTES

WHITLEY COUNTY

The Woman's Auxiliary, Whitley County Medical Society, met in regular session at Corbin, Friday evening, March 11, at 7:30 p. m., at the Carnegie Library, several members being present.

Mrs. B. J. Edwards read a paper on "The Diet for School Children" which was very helpful and interesting.

The prize, a beautiful hand-made apron, offered for the most suitable slogan for our organization, was awarded Mrs. J. H. Parker. The slogan is "Let us not live for self, but for service."

We now have seventeen members.

Our next meeting will be April 8, and our program committee has a wonderful play in store for us, a health play given by one of our Third grade teachers and pupils.

MRS. L. L. TERRELL, Secretary.

OLDHAM COUNTY

The second meeting of the Woman's Auxiliary, Oldham County Medical Society, was held Monday evening, April 4, at the home of Dr. H. B. Blaydes and Mrs. Blaydes in La Grange.

A splendid meeting and a happy evening was enjoyed by all those present. It was decided to hold the meetings every three months.

MRS. J. W. SAMS, President.

Is there a copy of the current issue of *Hygeia* on **your** Doctor's desk?

JEFFERSON COUNTY

The Woman's Auxiliary of the Jefferson County Medical Society held their luncheon meeting at the Brown Hotel on May 2. A delightful musical program was rendered by Mrs. P. M. Brooks, Mrs. H. E. Sanders and Mrs. Walter F. Jacob. The singing and whistling made us feel that spring had burst forth in all its glory. A most interesting address was made by Mrs. W. P. Steenkamp of Capetown, South Africa. Her subject was "Some of the Experiences of a Doctor's Wife in South Africa."

Mrs. Irvin Abell gave a report on membership taken from her records as Treasurer of the Woman's Auxiliary of the American Medical Association.

We felt very much honored in having with us Mrs. J. N. McCormack and Mrs. W. O. Bailey, whose husbands were pioneers in the medical work in Kentucky. These men have passed on to their reward, but the services they rendered will never be forgotten and they will ever live in the hearts of Kentuckians and on the pages of our history.

The program was concluded with a summary of the work and accomplishments of the Jefferson County Auxiliary since the organization in September, 1926. The Secretary-Treasurer reported a paid-up membership of eighty-three and a balance in the treasury of \$209.40.

Our September meeting will be a business meeting at the Public Library. The most important business will be the election of officers. Mrs. George Henden was appointed Chairman of the Nominating Committee.

Everyone enjoyed the delicious luncheon and voted the program most enjoyable and profitable.

LORA LEE BATES, President.

(Mrs. S. W. Bates)

MEMBERSHIP

Have you mailed the return postal sent you with Mrs. Robert L. Woodard's letter dated April 15? If not, please answer the questions contained thereon and mail it today.

From these returns, the State Auxiliary will complete its mailing list and we want to include you as one of the women of the profession in Kentucky whether you are a member of the Auxiliary, or not.

THE FLOOD

Our sympathy is with the sufferers of the Mississippi Valley disaster. All over the State, men and women have given their time, money, energy and material comforts to the thousands made homeless in an effort to brighten their lot during this trying ordeal.

The physicians and their wives living in the flood area have nobly responded to the call for help, freely giving themselves and their substance.

A report from Marshall County, where the water was high, roads impassable and bridges out, states that the Medical Society and the Woman's Auxiliary have worked in close harmony. With the aid of residents from all over the country, they have turned over to the Red Cross Flood Fund, \$636.75 in money besides clothing and supplies. Thirty-two burlap bags filled with clothes and four boxes filled with canned fruits and jellies were sent from the Benton County Court House, where everybody worked with a will. Mrs. Stilley reported that, "although the appeal said 'Do not send supplies—they perish enroute,' we just had to send some sweets for a sandwich for those poor, little, hungry children." And the physicians? They gave themselves in service, unmindful of their own need for sleep or food, responding generously to the urgent call of men, women and children caught in the throes of this great calamity.

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COUNTY SOCIETY REPORTS

Laurel The Laurel County Medical Society met on December 12, 1926, and elected the following officers for the year 1927:

H. V. Pennington, President; William Johnson, Vice President; G. S. Brock, Delegate; Oscar D. Brock, Secretary.

OSCAR D. BROCK, Secretary.

Franklin: The regular monthly meeting of the Franklin County Medical Society was held Thursday, February 3rd, at 12 M., at the Capitol hotel with the new president, Dr. F. M. Travis, presiding and the following present: Doctors Patterson, Ginn, Youmans, Minish, Budd, C. T. Coleman, Coblin, Heilman, Mastin.

A very profitable hour was spent in transacting business and discussion of clinical cases.

Dinner followed the business meeting. Adjourned to meet first Thursday in March.

F. W. MASTIN, Secretary.

Third District: The first meeting of the Third District Medical Society for 1927 met in the City Hall, Bowling Green, Ky. on April 27, with Dr. C. W. Simmons in the chair and the following doctors present: Doctors Simmons, Burrow, Fitch, Felts, Virgil E. Simpson, Louisville; Belcher, Lewis, Neel, Hibbitt, Louisville; Howard, Turner, Cherry, C. E. Francis, Cooke, M. M. Moss, London, Souther, Newman, Donnelly, Rutherford, Singleton, E. J. Keen, Crittenden, Strother, Adair McReynolds, Grubbs, Meredith, Byrne, E. W. Stone, Blackburn, Rau, Reardon, Hinton, Witt, Cartwright, Martin, J. B. Helm, R. C. Moss and Rothert.

Dr. F. D. Reardon and Dr. Simpson reported a case of punctionitis of streptococcal origin. Dr. W. C. Simmons reported a personal case of tick and his experience in having the alcohol injection of the nerve with the fluid invading the ganglion.

In the election of officers, H. M. Meredith, Scottsville, was made President; Logan Felts, Russellville, Vice-President, and J. H. Blackburn, Bowling Green, Secretary.

Virgil E. Simpson, Louisville, read a paper on "Peptic Ulcer Symptoms in Non-Ulcer Cases." H. M. Meredith, Scottsville, then read a paper on the "Treatment of Gastric and Doudenal Ulcers."

Luncheon was held at the noon hour at the Helm Hotel.

Hon. John B. Rodes, Bowling Green, gave a talk on "The Doctor in Court," C. W. Hibbitt, Louisville, read a paper on "Salpingitis," and C. C. Howard, Glasgow, read a paper on "A Few Points in Regard to the Surgical Abdomen."

All of these papers were freely discussed by all of the doctors present.

The meeting adjourned to meet in Franklin the latter part of June.

JNO. H. BLACKBURN, Secretary.

Logan: The May meeting of the Logan County Medical Society was one of unusual interest to the physicians of Logan and adjoining counties. Two separate meetings, one social and the other scientific, made up the program. At the invitation of Dr. Wm. A. Duncan, President of the Society, practically the entire medical profession of the county were his guests at the regular noon meeting of the Russellville Rotary Club. At this gathering the physicians joined in the club's special "Doctor's Day" program of which Dr. Duncan had charge. After the usual feast of good things to eat, served by the physicians' wives who were members of the Russellville Woman's Club, the gathering was addressed by Dr. William D. Haggard, of Nashville, Tenn., past-president of the American Medical Association, who gave a most interesting, instructive and practical talk on the importance of periodic health examinations. His address was greatly enjoyed. Club singing, special music written for the occasion in which the "medico" was featured, and a short talk by Dr. Walter Byrne, Sr., of Russellville rounded out a most pleasant hour with Russellville Rotary which will long be remembered.

Following the Rotary luncheon, the physicians present adjourned to the Dixie Moving Picture Theatre where they were again favored by an address from Dr. Haggard on the subject of "The Methods of Diagnosis in Diseases of the Stomach and Gall Bladder." His talk, illustrated by lantern slides, was most practical and very helpful to those present.

The day was a red letter day for the Logan County Medical Society. Twenty-eight physicians were present, one of the largest gatherings the society has ever enjoyed. May we have more like it.

WALTER BYRNE, Secretary.

Fayette: (Resolutions passed on the death of Dr. E. F. Beard, at a called meeting of the Fayette County Medical Society, March 23rd, 1927). The Fayette County Medical Society with sorrow records the passing of one of its most lovable and honored members in the person of Dr. Eugene Ferris Beard.

Dr. Beard was born in Oldham County, Kentucky, in the year 1852, and graduated from the Medical Department of the University of Louisville, Kentucky, in 1876, having married a few months previous.

Dr. Beard began the practice of his profession at Christianburg in Shelby County, Kentucky.

In 1900 he removed to Woodford County where he remained for a period of five years,

coming to Lexington in 1905.

On his arrival in Lexington he immediately identified himself with organized medicine, becoming a member of this Society, since which time he has been faithful and efficient in Society work.

Dr. Beard possessed high ideals and strove to elevate the profession in every way, ever looking with disdain upon charlatanry and quackery.

Dr. Beard's outstanding work was among the poor of Lexington in the capacity of city physician. How conscientiously and faithfully he discharged these onerous duties is within the knowledge of each of us.

Dr. Beard loved his profession and delighted in the companionship of its members. We can readily believe that it was just such a character that the poet had in mind when he penned these lines

"Sustained and soothed by an unfailing trust, approach thy grave like one who wraps the drapery of his couch about him and lies down to pleasant dreams."

Therefore, be it Resolved that this mark of esteem for our departed friend and brother be spread upon the minutes of our Society; that a copy be sent to the family and to each of the Lexington papers, and also to the Kentucky Medical Journal.

Resolved, that the Society send an appropriate floral tribute and attend the funeral in a body.

W. B. McCLURE
FRANK H. CLARKE,
JOHN W. SCOTT.

Hart: At a meeting of the Hart County Medical Society, January 18, 1927 at Munfordville, L. E. Comstock was elected President; S. F. Richardson, Secretary; J. W. York, Delegate, and E. E. Palmore, Alternate. A special meeting of the Society is to be held in April.

S. F. RICHARDSON, Secretary.

Harlan: The regular meeting of the Harlan County Medical Society was held Saturday, February 26th, at 12:00 o'clock in the basement of the Methodist Church with the following members and guests present:

P. O. Lewis, S. H. Rowland, W. R. Parks, W. M. Martin, Paul Beauchamp, C. C. Paynter, B. E. Giannini, W. H. Thayer, B. W. Whitfield, L. H. Redman, Arthur Jenkins, J. C. Nash, Leland Peyton, M. M. Riddell, Clark Bailey, N. S. Howard, W. P. Cawood, W. E. Riley, Pursifull, E. M. Howard, M. L. Gunn, C. P. Mayhall, J. B. Jones and C. F. Mouser.

Following a very delicious luncheon served by the Methodist Ladies the Society convened. The dentists of Harlan County were the guests of the Society and Dr. C. P. Mayhall read a very interesting paper on "Diagnosis and Treatment

of Vincent's Angina," with discussions by Dr. C. F. Mouser of Evarts, and Drs. B. W. Whitfield, E. W. Howard, M. L. Gunn, W. R. Parks, and W. H. Thayer.

It was voted to have the dentists of Harlan County made honorary members of the Society, and have an invitation extended to them to be present at each meeting.

Resolutions.

Whereas God in His infinite wisdom has seen fit to summon Dr. G. P. Bailey, one of our members, to a higher calling, be it resolved that the Harlan County Medical Society that they have lost a worthy and highly respected member of this Society, that the public of Harlan County has lost a faithful servant who for many years has administered to the sick and suffering, that in his loss a vacancy has been created which never can be filled.

This Society extends to the family, friends and patients of Dr. Bailey the heartfelt sympathy of the entire membership in our mutual loss.

Be it further resolved that a copy of these resolutions be spread on the minutes of the Society, that a copy be sent to the bereaved family, and a copy be published in the local paper and the State Medical Journal.

(Signed) W. R. PARKS,
W. E. BAILEY,
B. W. WHITFIELD,
Committee.

The Society was then adjourned until the third Saturday in March.

M. L. GUNN, Secretary.

Scott: The Scott County Medical Society was delightfully entertained by Dr. and Mrs. H. V. Johnson at their home on Chamber Avenue, May 5, 1927 with a five course dinner and refreshments. The following members and guests were present, with L. F. Heath, President, presiding: Julian Estill, Charles Vance, Bedford Brown and John Lewis, from Lexington; William Salin, C. T. Lancaster, D. B. Knox, F. C. Collin, H. H. Roberts, W. S. Allphin, E. C. Barlow, William Mason, H. V. Johnson, J. C. Thomasson and A. Stewart.

William Salin opened the meeting with prayer. The minutes of the previous meeting were dispensed with, no business, so the meeting was opened with Hon. Craig Bradley, Chairman of the Hospital Board, reciting the financial status and progress of the John Graves Ford Memorial Hospital for the past year, which was requested by Dr. W. S. Allphin, Chairman of the Hospital Committee, who desired to keep the Medical profession in touch with the Hospital. Mr. Bradley very ably explained that the Hospital was almost on a self supporting basis and was very thankful to the Doctors for their loyal support and was sure of their continued co-operation, of

which every member assured him that he would receive. After which an interesting paper on Scarlet Fever, Its Diagnosis and Treatment, read by Dr. L. F. Heath and freely discussed by Dr. William Mason, followed by Dr. Julian Estill, Dr. Brown, Dr. H. H. Roberts and Dr. A. Stewart.

After which each Doctor could not refrain from again thanking Dr. and Mrs. Johnson for their delightful entertainmetn of the evening. The meeting adjourned until June 2, for a regular meeting of which Dr. H. V. Johnson will have a paper, "Care and Technique of Obstetrics From Conception Until Birth," discussed by Drs. E. C. Barlow and Sanford.

A. STEWART, Secretary.

Carlisle: Carlisle County Medical Society met in quarterly session in Dr. Jackson's office, at Arlington, on April 5, with the following members present: G. W. Payne, H. A. Gilliam, W. Z. Jackson, J. F. Dunn, R. T. Hocker. Dr. G. L. Thompson of Wickliffe, being present was made an honorary member.

After Divine invocation by Dr. R. T. Hocker, and reading of minutes of previous meetings, the following papers were read: "Anemia," H. A. Gilliam; "Newer Methods of Treating Scarlet Fever," J. F. Dunn.

There was quite a general discussion on both papers, all present taking part, Dr. Jackson reporting a case of pernicious anemia with a red cell count of only 40,000 per cm.

Supper was served at Victor Hotel by the Arlington Doctors.

The Hospital Committee reported no action. A new committee was appointed composed of the following members: H. A. Gilliam, J. F. Dunn, G. W. Payne, W. Z. Jackson and R. C. Burrow.

A card of thanks was received from Mrs. W. L. Mosby for the floral tribute from the Society to Dr. W. L. Mosby, who died of heart failure in his office on the 17th day of January.

J. F. Dunn, G. W. Payne, and H. A. Gilliam were appointed to draw up resolution in regard to the death of Dr. Mosby.

After a general round table discussion in which all took part, meeting was adjourned to meet in the office of H. A. Gilliam, at Milburn, June 7th.

H. A. GILLIAM, Secretary.



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KENTUCKY MEDICAL JOURNAL



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No. 7

EDITORIAL

DR. FREDERICK A. STINE.

Frederick A. Stine, son of Frederick A. and Glovina Carlisle Stine, was born in Newport, Campbell county, Kentucky, July 15, 1867. He received his early education in the Newport public schools, and after a varied commercial experience entered the Cincinnati Medical College from which he graduated in 1901. Dr. Stine was married to Carrie D. Stuhlreyer December 3, 1913.

After graduation he began the practice of his profession in Newport, giving especial attention to the treatment of venereal diseases. He was eminently successful from the start, soon establishing a large practice. During the whole of his professional career Dr. Stine was associated with Dr. John L. Phythian and until his marriage resided in the family of Dr. Phythian.

He early became interested in public health work, and appreciated the necessity for the employment of preventive measures to check the ravages of venereal diseases, as well as for skillful and sympathetic treatment of these diseases. His maturity, and his broad experience previous to his study of medicine eminently fitted him for success in all phases of this work. To the treatment of these diseases, as in his whole practice, he brought a broad human experience and deep sympathy which endeared him to his patients and greatly contributed to his success. He was recognized as especially skilled in diagnosis and in the exhibition of specific remedies indicated in his specialty.

His influence was largely felt in the various medical societies to which he belonged. It is generally recognized by those familiar with his work that by his geniality and diplomacy he did more than any other man to energize and maintain the local medical society. During his incumbency as secretary of this society the manifold duties of the office were so ably performed that he was regarded as one of the best secretaries in the state.

Dr. Stine was elected president of the Campbell County Board of Health in 1918 and held that office until his death. He was elected secretary of the Campbell County



Dr. Frederick A. Stine

Medical Society upon its organization and continued in that office for many years. He was a member of the State Board of Health and at the time of his death was councillor for the eighth district. Dr. Stine was prominently identified with the activities of the local Republican party, and for many years served as member of the Campbell County Board of Court House Commissioners.

In all matters pertaining to his profession he was especially conscientious and in performing the duties pertaining to his public health activities would permit no considerations of personal convenience or advantage to weigh against his conception of the best interest of the public.

Dr. Stine died in Newport, Kentucky, February 6, 1926, after a brief illness. He is survived by his widow and one son, Frederick Junior, age eleven years, to whom he was a devoted husband and father.

It has been the fortune of few physicians of Dr. Stine's age to wield so large an influence both in his profession and elsewhere, and to leave so large a circle of friends among all

classes of those with whom he came in contact.

It is difficult for one who was long the recipient of his loyal and disinterested friendship to write restrainedly of his conscientious, efficient work and of his optimistic, virile personality.

THE WASHINGTON SESSION.

The American Medical Association held the greatest of its great meetings in Washington. Of course, the most important part of these meetings is the scientific work done in the scientific sections. The readers of the *Journal* of the *American Medical Association* will find in the next few months the very latest advances in scientific medicine as presented at the meeting. Kentucky was represented at the meeting by a large delegation of its leaders.

Outstanding amongst other great events of the meeting was the presentation by Doctor Noguchi of a tentative report which seems to indicate that he has at last found the elusive germ which causes Trachoma. We wish it were possible to reproduce, so you could visualize it, the drama of his report before the section on ophthalmology. That this discovery will, if finally accepted, result in definite methods for the prevention of a disease which vies with syphilis and tuberculosis in its economic importance, is conclusive. From studies already made it seems apparent that this disease develops best in the human host who has dietary deficiency. This is the belief of those best qualified to understand its ravages. The leading clinician who has developed this line of thought is our own Stucky.

Another outstanding feature of the meeting was the address delivered by the President of the United States, Hon. Calvin Coolidge. Mr. Coolidge put the great weight of his authoritative position behind scientific remedial and preventive medicine. It was an enheartening message to physicians everywhere.

The work of the House of Delegates was constructive to a degree that has rarely been attempted in previous sessions. Those who read its proceedings in the *Journal* of the *American Medical Association* will find cause for congratulations to the leadership which is being developed in American medicine. It emphasizes especially the great value, not alone to our profession, but to the people generally, of the wise and statesmanlike character of the Secretary and General Manager of the American Medical Association, Dr. Olin West.

It is unfortunate that the lay press gave most of its space to the action of the House of Delegates on the alcohol question, which

was probably the least important item of its work. It was significant that at the succeeding conference of State Health Officers with the Surgeon General of the United States Public Health Service that the emphasis in this alcohol question was put where it belongs. It was definitely proven that alcoholic beverages are just as dangerous now to the health of those who imbibe them as they ever were. They are of no more value, except to the irresponsible dealers in them, than they were before the Eighteenth Amendment was adopted. In Kentucky we are happy to say that the number of physicians using them in practice are constantly decreasing and we look forward confidently to the time when their use in scientific medicine will be entirely discontinued.

Never before has scientific medicine been of such recognized value to people everywhere.

TWO BOOKS WE ALL NEED.

Your Editor has just had the pleasure of reading two books which every physician should own. The first is "The Microbe Hunters" by Paul DeKruif. It is the most delightfully written book that we have read in many a day. It puts into your hands exactly the information you want about the several outstanding men, who have made modern medicine possible, that you would like your friends to know. It gives you food for thought as you drive from place to place and arms you with a thousand useful conversations to your patients. No man who ever expects to make a talk before a group of people or to an individual about medicine can afford to be without it. The technique of its construction is different—and charming. We recently heard a discussion of it before "The Conversation Club" in Louisville and as diverse minds of Doctors Pfingst, Abell and Flexner and Doctor Mullins, the President of the Baptist Theological Seminary, and Hon. E. S. Jonett, the Vice-President of the Louisville & Nashville Railway Company, said that they had found it almost impossible to lay it down once they had started reading its first pages.

The second volume is an even more recent publication of Fisk and Crawford on "How To Make the Periodic Health Examination." This is a book written by one of the most practical of modern physicians for their peers. To either the general practitioner or the specialist it will prove, if utilized, the most valuable book in your library. It is an absolute *sine qua non* to the most important advancement that has been made in the actual practice of medicine in a century. It amplifies and extends the splendid manual published by the American Medical Association

which was distributed by our State Association to all of our members. If the methods in it are properly and competently used by any qualified physician we believe that it will nearly double or treble his income and that it will multiply his usefulness to his clientele by more than any other publication heretofore written. It includes not merely the technique of making a health examination but valuable suggestions as to the hygienic advice that needs to be given following such examinations which will make them of the greatest possible value to those examined. A physician who qualifies himself to make the thorough-going diagnosis of what we have too frequently assumed to be trivial conditions will soon find that he has become so valuable to his patients that he will be delighted.

"The Microbe Hunters" costs \$3.50 and "How To Make the Periodic Health Examination" costs \$4.00. The *Journal* is prepared to order either of them for you and will mail them upon receipt of check or will send them C. O. D., as you prefer.

CALCULUS ANURIA.

In the May number of the *Journal* the very interesting paper of Dr. John T. Bate of Louisville on "Calculus Anuria," read before the Frankfort session of the Kentucky State Medical Association, was published on Page 211. Due to an error in this office, and, without any fault on his part, the discussion of Dr. Louis Frank was omitted. Dr. Frank's discussion was so important that we are publishing it here with the hope that our readers will review Dr. Bate's paper in the light of this discussion:

"Though I didn't hear Dr. Bate's paper, I had the pleasure of reading it several days ago. This to me is one of the most interesting subjects that I have ever had to deal with. Some years ago after having seen one or two cases of anuria, I, in conjunction with Dr. Baldauf, did quite a little experimental work in an endeavor to determine, if we could, what was the cause of anuria. Not a great deal of work had been done at that time.

I speak of calculus anuria as a complete suppression of urine, not a retention but a complete suppression of urine; and the thing of interest to me was suppression in those cases where only one side was diseased, as, for instance, calculus obstruction on one side or, why, after a nephrectomy of one side, the other kidney will cease to function.

I believe the explanation Dr. Baldauf and I gave has been generally accepted. We found for instance, after ligating a ureter or after removal of a kidney in animals experimentally that the kidney on the opposite side

would immediately begin to undergo a hypertrophy, that it also presented a most marked congestion which was both arterial and venous, that very shortly afterward there would be changes in the renal tubules, as well as in the epithelium of the glomerule. In many cases the urine secured later from the functioning kidney showed evidence of a mild nephritis. This always disappeared very rapidly after relief of the obstruction.

We decided that the cause of the anuria was a tremendous congestion in the remaining kidney, that was not the subject of attack;

We have seen quite a number of cases of unilateral calculus in which there has been anuria and we have seen one case in which there has been anuria following a unilateral nephrectomy for tuberculous disease. In this latter case the other kidney was present, demonstrated before operation to be normal and healthy and susceptible of carrying on the functions of life. In that individual there was no urine excreted from the remaining kidney during the period of the patient's subsequent life which was in the neighborhood of twenty-two to twenty-three or twenty-four days. The wound healed, he went home and died at the end of this period without having excreted any urine at all.

This patient had no convulsions, and though dying of uremia none of these patients have convulsions.

The first case I saw was in an individual who had a calculus obstruction on one side. The calculus was not discovered until the time of the operation. We thought we recognized what was the matter with him and did a decortication and a pyelotomy followed by recovery.

He later passed the calculus through the urethra and is still well and living today.

Last year we had an individual who had bilateral calculus disease, one kidney destroyed, the latter was removed. He later developed a second calculus in the left kidney, developed anuria, this calculus was removed by pyelotomy, function re-established and he went on for another year, obstruction again developed, and I think he then went six or eight days without excreting urine. His calculus was again removed, he again began to function normally and a third time he had the same thing happen and died.

These are very interesting cases and unilateral calculus obstruction is a thing that we should always bear in mind in cases of real suppression. In later years we have been able in two cases to relieve obstruction due to stone by ureteral catheterization. That is a thing I would suggest in the treatment of these cases. Of course at first, an x-ray study with localization of the obstructive calculus

if possible and immediate catheterization of not only the kidney which is obstructed actually or presumably but the other kidney also.

We have done this in two cases and one of the patients whom I saw very recently has gone on without any further disturbance. Both of these patients were in practically the same condition. In one of these cases twenty-four hours after passing the ureteral catheter the urinary output was normal. The obstructed kidney secreted, however, twice as much urine as the unobstructed kidney within the first twenty-four hour period of secretion of urine.

In experimental ligation of the ureter and then after a day or two days removing the ligature and permitting that kidney to secrete, its secretion always at first exceeded the output of the normal kidney.

It may be interesting to know that you can obstruct a kidney for a period of two weeks or probably three weeks, and that function will be re-established. It is also interesting to know that you can ligate the ureter of a normal kidney, if it has been accidentally injured during an operation, and that it will not only cease to function but nothing will ever be heard from it as a rule. In other words as soon as the blood pressure in the pelvis of the kidney is equalized by the urinary pressure in front, the kidney will cease to secrete. It will go on and live but it no longer carries on its function."

Paraplegia Cured by Hydrochloric Acid.—In the case reported by Eve, diagnosis was possible by measuring the average diameter of the red cells, and by that alone. The patient was exhausted sexually. Hydrochloric acid was not present in the test meal secretions. The interpretation of the case is that, owing to the absence of hydrochloric acid, the intestines became infected with some germ which is capable either of producing the hemolysis of pernicious anemia or of causing the degenerative changes in the spinal cord. Probably the sexual exhaustion was a factor in deciding the incidence on the spinal cord. The patient was given half a pint of hydrochloric acid, three times a day, after food. Its strength was 5 drachms of dilute hydrochloric acid to the pint of sweetened water. He gradually improved, and eventually made a complete recovery.

ORIGINAL ARTICLES

CAESAREAN SECTION.*

By J. HUNTER PEAK, M. D., Louisville.

Since the dawn of human history, or since life came into the world, there is no question but many women have lost their lives on account of conditions we recognize today, and which, if known then, and the way of handling them as we know now, the women would not have died from those causes.

Back in the time of the Pharaohs, today, and within the last few years, there have been found many bas-relief works or pictures of women undergoing the operation now known as Cesarean section. We do not know, from any authentic source, whether these women were living or dead when the operation was undertaken.

It has been shown that many, many centuries before the time of Christ, in women at or near the end of uterogestation, the abdomen was opened for the purpose of removing the child in the hope that it might live. About 715 B. C. Pompilius codified the Roman laws and afterward they were called "lex regia." In these laws it was decreed and made obligatory on the part of the public that in all women who died near the end of gestation the child should be delivered in that way. There were two reasons for this. First, that the child might live and be of benefit to the community in which it would be reared; second, if the child did not live, it and the mother could be given a separate funeral.

The name "Cæsearean" a great many people have thought comes from "Cæsar." That Julius Cæsar was born that way I expect there is no question, but the old idea that his mother consented to give her life in order that there might be an heir to the throne is possibly a mistake, because letters have been found written many years later to Julia, his mother, so she must have lived after he was born. Cæsar was born about one hundred years before Christ, and some have thought the word Cæsearean was derived from this operation, but this is not true, because Cæsar lived before that time, there were other rulers by the same name before Julius Cæsar came into the world. It is more likely that the word Cæsearean comes from the Latin *caedere* (i. e. to ent), and this means was used to deliver women, not only those where the child was possibly living, but also those who had been dead long enough so that the child was also dead.

The first period of Cæsearean section and

An address, illustrated by moving pictures delivered before the Jefferson County Medical Society.

the development of this work extended from the earliest time, of which there is little known, downward to about the time of Christ, then to the fifteenth or beginning of the sixteenth century, to provide separate burial for mother and child, or for preservation of the child if the operation could be performed sufficiently early after the mother's death.

After the birth of Julius Caesar, according to history, the first living child to be born by Cæsarean section and the mother to survive, was in Switzerland, the operation being performed by Jacob Nufer, a Swiss butcher, upon his own wife. That was about the beginning of the sixteenth century. After all the midwives had attempted delivery without success, and after several barber-surgeons had been called in consultation and could not effect delivery, the woman was told there was no further hope. However, the husband told her that he would not let her die, that he would open her abdomen and deliver the child. This was successfully accomplished, and we are told in history that she bore four or five children normally afterward.

From that time until 1876 nearly all the women subjected to Cæsarean section died, and when we consider the crude manner in which the work was done we can understand the reason for the mortality. That was before the days of asepsis and antisepsis; the uterus was simply opened and the child and placenta extracted. The uterus was then allowed to recede into the abdominal cavity and the external incision was closed. There were two reasons why the woman might die: First, the lochia escaped into the abdominal cavity, infection occurred, and fatality was almost inevitable; or if the woman survived, she was thereafter an invalid as the result of the infection. Second, death supervened as the result of severe hemorrhage.

It was Porro, in 1876, who recognized these two factors as the cause of so many deaths. The surgical technique was not then so well developed as it is now, and has been since the advent of bacteriology, and yet Porro recognized the dangers and attempted to forestall them by emptying and amputating the uterus and fixing the stump in the abdominal wall. For this purpose he used what is now known as a figure-of-eight suture placed around two steel pins transfixing the stump in the abdominal wound. Before that time the mortality from Cæsarean section was at least 90 per cent, and subsequently about 52 per cent of the women died. Many of those who survived were in a serious condition because of the long continued infection following the procedure.

Strange to say, during the same year (1876) or the year following, Sanger conceived the idea that the best way was not to

perform the Porro operation, which entailed fixing the uterine stump in the abdominal wall, but to suture the uterine incision, replace the uterus in the cavity, and close the abdominal wall just as in any other operation. Credit is due Sanger for the present perfected technique of Cæsarean section. He may legitimately be called the father of the present technique of the operation.

There are four periods in the history of Cæsarean section. The first period was where women were delivered in this manner for the purpose of saving the child if possible, or giving it a separate funeral if dead, there being no hope of saving the life of the mother. That period extended from the earliest times to about 1500 A. D. The second period was from 1500 to 1876. During that time very few of the women recovered following the operation, and it was never undertaken except as a *dernier ressort* in an attempt to save the life of the child as well as the mother.

It was stated by Budin, of Paris, and by Spaeth, of Vienna, also by Murphy, of London, and authorities in all the other great centers of medicine and surgery in Europe, that not a single patient survived the operation of Cæsarean section from 1778 to 1876, a period of ninety-eight years. However, during that time Harris, of New York, had collected sixteen cases with a mortality of 52.5 per cent. Subsequent to the Sanger operation and its perfected technique, Harris collected 1606 cases with a mortality of only 4 per cent; in other words, 96 per cent of the patients recovered.

The period from 1500 to 1876 was what might be termed the experimental stage of the operation, which was considered very dangerous until the technique was improved and simplified by Porro and Sanger. From that time (1876) until 1907 may be considered the third period, or the period of perfection of the technique, and where the lives of nearly all the patients were saved. With the present perfection of the technical details of the procedure, Cæsarean section is about as safe as any other abdominal operation, everything else being equal.

From 1907 until the present time there have been a few operators who have advocated and practiced Cæsarean section without entering the abdominal cavity, that is by the extra-peritoneal method. It is claimed this plan is more advantageous than ordinary Cæsarean section in the presence of frank infection, or in cases where it is known infection might have been easily acquired and probably exists, and where delivery otherwise than by operative means is impossible. I understand the extra-peritoneal method is now practiced by DeLee and several others in this country

in cases where infection has already occurred. I wish to say that I doubt very much whether, under our present methods of protecting the abdominal cavity from extension of infection, any such operation is ever justifiable. The procedure requires too much time, it is too tedious, and it is unsatisfactory, because the peritoneum is often torn, adjacent structures, especially the urinary bladder are injured, and disastrous results sometimes follow. At all events, the extra-peritoneal method should never be attempted by any surgeon who has not thoroughly mastered the technique of the procedure. It is infinitely more difficult and entails greater danger to both mother and child than the ordinary Cæsarean section.

It is not my intention to describe the technical details of Cæsarean section,—the moving picture will do that,—but it may be interesting to briefly mention some of the recognized indications for the operation.

It has always been known that the pelvis of women may be subject to faulty development. When a woman is normally developed, when her pelvis and everything else is normal, we know that she has very little trouble in giving birth to her child through the natural channel; but sometimes there is faulty development of the pelvis, the most common type being what is known as infantile pelvis.

I have performed fifty-five Cæsarean sections. The fifty-fourth operation was performed last April and will presently be shown in moving pictures, and since then one other patient has been similarly operated upon. The case to be illustrated by the moving picture tonight belongs to that class known as infantile pelvis, the anteroposterior diameter being only two inches and the lateral diameter not more than four inches, making it impossible to deliver the woman by version or any other method than Cæsarean section. The patient was otherwise perfectly normal and healthy. This child was the third that I had delivered for the woman in the same way, and she and all three children are living.

Any disease or deformity causing marked change in the contour or size of the pelvis may be a direct indication for Cæsarean section. The so-called Nagele's pelvis is an example of this type. In such cases the deformity is caused by fusion of the sacrum with the ilium, the result of arrested development, giving the appearance of only half a pelvis. Tuberculosis, osteoma, cancer and other diseases may cause pelvic deformity and bring about the necessity for Cæsarean section. I have seen two cases in which Nagele's pelvis was present, and recall several others where pelvic deformity was due to tumors.

About five years ago I presented before

this society a paper* on the indications for Cæsarean section and reported forty-four cases, ten or fifteen of the patients being present with their children. I do not now recall how many different indications for the operation were represented by the group of cases presented, but there were many.

In the presence of cervical neoplasms, particularly advanced carcinoma, I believe Cæsarean section is indicated. Malignant disease involving the vaginal outlet and the rectum, on account of the great amount of neoplastic tissue, may be an indication. I have seen one case, the only one of the kind I have observed or of which record can be found, where a tumor in the anterior vaginal wall filled the entire pelvis and prevented normal delivery. A small tumor was noticed when the first child was born, but the patient did not have it removed. She again became pregnant and this time was sent to the hospital and prepared for delivery by Cæsarean section because of obstruction from the tumor. While on the table with the operation started, labor pains became so violent that the child's head pressing downward against the tumor caused it to rupture. The contents had much the appearance of a dermoid cyst, with very foul odor and other evidences of the presence of considerable purulent material. Cæsarean section had to be completed and the child lived but the mother died. This case was not in my personal practice, but I happened to be present at the operation.

Any tumor in the anterior uterine wall, such as a fibromyoma, situated low between the parturient canal and the urinary bladder, may so fill the space as to obstruct descent of the child's head, and thus constitute an indication for Cæsarean section. I operated in one case where the woman had previously given birth to fourteen children in the normal way. When pregnant with the fifteenth child it was found she had a uterine fibromyoma which prevented the child from making any presentation whatsoever, except a cross presentation, and normal delivery was impossible. Cæsarean section was performed, the child lived, and the woman left the hospital on the ninth day after operation. This patient stated that if she ever had any more children she wanted them delivered by operation, that she did not wish to bear further children in the natural way, since she had seen how easy it was to be delivered by Cæsarean section.

Ovarian tumors may be so situated as to obstruct delivery, because of their great development, or possibly by adhesions to other pelvic viscera. Such tumors sometimes develop almost entirely in the downward direc-

*Kentucky Medical Journal, July, 1921, pages 410-416.

tion instead of upward, and may so fill the pelvis as to effectively prevent delivery.

Sometimes anterior or ventral fixation of the uterus may be the cause of such severe dystocia, on account of distortion of the normal uterine relations, that when labor begins Cesarean section may be found necessary.

Extensive cervical and perineal lacerations in previous labors, especially where the rectum is involved, even though successfully repaired at the time, constitute a valid indication for Cesarean section. The same may also be said of scar tissue of extensive nature in the vaginal walls. Under such conditions, if the woman is delivered in the normal way in subsequent pregnancies, the extensive scar tissue is certain to be separated, the injury may extend into the uterus and the woman succumb from infection. Moreover, ruptured scar tissue rarely heals, and that of itself would be a constant source of danger.

Advanced pulmonary tuberculosis, where the woman is so exhausted from the effects of the disease that she cannot withstand normal labor, may be an indication. Many women with tuberculosis have lived for years after delivery by Cesarean section, whereas their lives might have been lost had they been delivered in the normal manner.

Serious cardiac disease, such as myocarditis, valvular lesions where there is no attempt at compensation, etc., may be a valid indication. In the presence of serious renal lesions Cesarean section may prevent extension of the disease and prolong the life of the woman for many years.

In persistent occipito-posterior positions, where the high forceps operation would be necessary to effect delivery, and especially where efforts at labor have already exhausted the woman and complete uterine inertia has supervened, Cesarean section is indicated. Crossed or shoulder presentation, particularly where one arm is protruding, must also be considered as an indication.

Puerperal eclampsia is sometimes an important indication for Cesarean section. I do not mean to say, however, that the operation is indicated in every case of eclampsia. Take a case, for instance, where a woman, rather advanced in years is pregnant with her first child, where possibly the viability of the child is certain if given a chance to be born, but where the mother's condition is very serious, where the cervix is elongated with vaginal outlet small, where the cervix is difficult to dilate, and where conditions are such that it would be impossible to do anything of advantage unless done quickly, Cesarean section in my opinion offers the best opportunity for both the mother and the child. Eclampsia seldom develops until after the seventh month

of gestation, and in such cases prompt Cesarean section may be the means of saving mother and child.

Placenta previa, especially of the centralis type, is in itself in many instances an indication for Cesarean section. I have operated upon several patients of this type and have never lost a child that was living when the operation was started and only one of the mothers succumbed. This patient was a Mrs. W. who had central implantation of the placenta and when first seen by me was so exhausted from hemorrhage that I could see nothing to be done except take her to the hospital and complete delivery as quickly as possible. The child was already dead, the cord was prolapsed, and an arm protruded through the placenta into the outside world. I had many times performed version and delivered women in that way. This we know is always dangerous to the child, but in this case the child was already dead. Under the circumstances I believed possibly I could deliver this woman by version, and while she was in the hospital I attempted it, but the hemorrhage was so great that it could not be sufficiently controlled to save her life. I believe in that case Cesarean section was the better plan, it is relatively a simple operation, can be performed very quickly, and everything else being equal, it is practically devoid of danger. This particular patient died, the child was already dead when I was first called, it being the only fatality in the fifty-five cases, all the other mothers and children are living and well today.

It is thought by many physicians that it is extremely hazardous to deliver a woman by Cesarean section where forceps have been previously used. If forceps have been tried under strict aseptic precautions with the patient in the hospital,—and I think no woman should be delivered with forceps except in a well-equipped hospital,—I do not believe it would be hazardous to deliver her at any time afterward by Cesarean section. However, it is recognized that the dangers are increased where a great many vaginal examinations have been previously made, and yet the woman whose moving picture you will see presently had been in labor for thirty-six hours before I saw her the first time and I expect one hundred vaginal examinations had been made by those who attended her and attempted to complete delivery, without any special precaution whatever being taken. Complete uterine inertia had supervened when I first saw the woman and examination disclosed the fact that she could not be delivered in the normal way. She was placed in the hospital and allowed to rest until the next morning when Cesarean section was performed. Des-

pite the unfavorable conditions due to repeated examination and attempts at delivery, she had no trouble following the operation,—no fever, no infection, no sepsis. Under any circumstances where the conditions demand the high forceps operation, I believe Cæsarean section is much safer. High forceps application often causes serious injury to the soft parts of the mother, and there is always danger of fatal injury to the child.

I have already detailed much of the history of the woman whose picture is to be shown. She was perfectly healthy in every respect, but had an infantile pelvis, she was anxious to have a family and was willing to bear children even after she knew they could be delivered only by Cæsarean section, and she has now given birth to three children in that way. She was a very intelligent and deeply religious woman. The first operation upon her has been sufficiently described.

The second time she was admitted to hospital a day or two before the time when labor was expected. No vaginal examination was made and none was necessary until the advent of signs of beginning labor. When the cervix was found quite well dilated she was taken to the operating room and again delivered by Cæsarean section. No trouble developed following the first operation even though perfect asepsis was probably not obtained, but after the second operation when we were certain of aseptic technique throughout a stitch abscess developed. However, this caused little trouble and the patient was dismissed well on the fifteenth day after operation.

Before the third operation the woman was kept in the hospital under proper care for some time, her physical condition was carefully watched, her urine was frequently examined with negative results, and during the entire time she complained of nothing. She had no pain and expressed herself as feeling perfectly well. Strange as it may seem, at the third operation the uterus was found firmly attached to the anterior abdominal wall by omental adhesions, there being nothing between the uterus and the abdominal wall except the omentum to which both the uterus and abdominal wall were attached. It was therefore impossible to effect delivery of the child by Cæsarean section without dissecting the omentum from the surface of the uterus. It was thought unwise to separate the adhesions between the omentum and the abdominal wall because of the extensive area covered and the large blood vessels in the omentum which if divided might have caused hemorrhage and death. The omentum was accordingly left attached to the abdominal wall just as it had been since the second operation, making an incision through the omen-

tum and separating it from the uterus in order to complete the operation. The woman had complained of no symptoms during the time these adhesions had existed, so evidently they did no harm. To have dissected the omentum from the abdominal wall would have required considerable time and would probably have increased the danger of the operation. After dissecting the omentum from the uterus the latter was incised and the baby and placenta delivered. The uterine wall was badly torn during the procedure as the work had to be done hurriedly. The placenta was attached anteriorly and had to be incised before the child could be delivered.

In this instance a modified Porro operation would have been necessary because of the torn condition of the uterus, but fortunately both the woman and her husband, over their signatures, had requested me to do something that would prevent further pregnancies, as they already had three children and all had been delivered by Cæsarean section. A supra-vaginal amputation of the uterus was performed, the uterine stump allowed to recede into the abdominal cavity, and closure of the various structures effected in the usual way.

The child was living and cried lustily within four minutes after being delivered. The convalescence of the mother was without untoward incident and she left the hospital with her baby on the fourteenth day after operation.

I might mention that in the after-care of patients subjected to Cæsarean section an obstetrical binder is applied, just as after normal labor, and the abdominal wall is further protected by adhesive plaster. Pituitrin is administered every four hours for the first few days to prevent gaseous distension.

The moving picture now being shown was taken at the Deaconess Hospital with the consent of the patient and her husband. The various steps of the operation are fairly well illustrated as will be observed by those of you who can see the picture. What is apparently a serious hemorrhage during delivery of the child is principally from the placenta and little attention was given to it. The woman lost very little blood during the operation.

In closing, I wish to say that just thirteen days after the operation the patient witnessed herself being operated upon when the picture was shown at the hospital for my approval.

DISCUSSIONS.

Edward Speidel: Dr. Peak has given us a very interesting presentation and I think he deserved a larger audience.

As to the indications for Cæsarean section: Contracted and deformed pelvis from any cause are regarded as indications for the operation, but in all cases—unless it is plainly apparent that

delivery cannot possibly be accomplished normally—the patient should be given the test of labor, because it is astonishing what nature is sometimes able to do in the presence of a deformed pelvis. This is especially true in so-called Nagele's pelvis mentioned by Dr. Peak in which one diameter is contracted and the opposite diameter correspondingly enlarged. It often occurs that the baby is born through the opposite on enlarged side. We recently had an instance of this kind in the Louisville City Hospital where preparations were made for Cæsarean section on a woman with contracted pelvis. Under the influence of the anesthetic and before the operation was begun the baby was born despite the pelvic contraction.

One form of contracted pelvis not mentioned by the essayist now recognized as an indication for Cæsarean section is contraction of the outlet, or the so-called "funnel pelvis." If this condition is not recognized prior to the advent of labor, and if the patient has been in labor for a considerable length of time when obstruction at the outlet is discovered, the only alternative under such circumstances is pubiotomy. In my opinion the woman has a much better chance of recovery after Cæsarean section than after pubiotomy, consequently in such a case Cæsarean section is indicated.

I am glad the essayist mentioned the subject of eclampsia. I think the cases are rare in which Cæsarean section is indicated in eclampsia, and the operation should not be performed if the baby is premature. There is nothing more pitiful than to have the mother die after performance of classical Cæsarean section with a seven months baby. Under such circumstances it should be possible to deliver the woman by vaginal Cæsarean section which gives her a much better chance for life. Elongated and undilated cervixes in eclampsia are rare conditions, because the congestion of the latter months of pregnancy produces softening of the cervix, and in my thirty-two years of obstetrical experience I have never seen a so-called persistently rigid cervix in the last months of pregnancy except when pathological. I think it should be generally understood that eclampsia is not, *per se*, except in rare instances, an indication for Cæsarean section.

Dr. Peak mentioned an unfortunate case of placenta previa centralis. Not long ago we had in the Louisville City Hospital a case of placenta previa in which we were more fortunate. The woman was admitted after she had been in labor for more than twenty-four hours and had lost a tremendous amount of blood. The condition was easily recognized and a blood transfusion was given at once, the husband being the donor. Cæsarean section was performed a few hours later and the child and mother lived. I believe placenta previa of the centralis type is

a valid indication for Cæsarean section.

Referring further to pelvic contractions: It must not be forgotten that the pelvis may be normal and yet delivery may be impossible because of an overgrown child. On the other hand, there may be a moderately contracted pelvis and yet a child of normal size may be delivered without much difficulty. I believe in all such cases a test of labor should be given, and if after a fair test there is no progress then Cæsarean section is indicated.

The high forceps operation is not employed by obstetricians of the present day. The indication for high forceps is a satisfactory test that the head will not descend into the pelvis, and consequently under such circumstances—unless one is assured that the child can be easily delivered by version—then Cæsarean section should be performed.

Dr. Peak in his moving pictures showed us the technique of Cæsarean section. Quite naturally in the course of many operations we gain experience that will be of benefit to others. We have found, for instance, that the child will always breathe as soon as it is removed from the uterus, if the anesthetic is started late when everything else is ready and if the child is delivered within three to five minutes. The child cries almost as soon as it is born.

Another point of importance in the discussion of Cæsarean section is the instruction given by certain authors that before making the abdominal incision to administer a hypodermic injection of ergot and pituitrin. We know that the action of pituitrin is to produce profound contraction of the uterus, and the same dictum holds good in Cæsarean section as in normal labor, that is no pituitrin should be given so long as the child is inside the uterus and the cervix undilated, otherwise sooner or later one will have rupture of the uterus. The effect of pituitrin on the uterus is such that the sutures will often break through after being properly placed. We simply give a hypodermic of ergot and as it takes twenty minutes for its full effect, there is no interference with suturing of the uterine incision. Only after the sutures have been completed is pituitrin administered. It is unnecessary to inject it directly into the uterus, because pituitrin acts just as well when injected into the outer side of the thigh and has the same effect.

In all the Cæsarean sections that I have performed, including two second Cæsarean and one third Cæsarean, there have been found at times adhesions between the cut surface of the uterus and the anterior abdominal wall. It has occurred to me that possibly a slight change in the technique might minimize such adhesions, and at the first opportunity I intend to place the closing sutures according to the method of Cushing, that is inserting the peritoneal suture later-

ally and inverting the peritoneal edges in order that the suture line may be buried in that way. I believe by this plan adhesions of the uterus to the abdominal wall may be prevented.

Another point I would like to call to your attention that has not been specifically mentioned is the question of sterilization in cases where Cæsarean section becomes necessary. It is well known that ligating and dividing the Fallopian tubes does not insure sterility, since many women have subsequently become pregnant. It was thought that removing a section of the Fallopian tube at the uterine cornu and suturing with silk would be successful, but I have observed one case of pregnancy following such an operation in my own practice and one in the practice of a colleague. Since then I follow the method of ligating the tubes in two places about an inch from the uterine cornua, dissecting the uterine ends free and then making a small slit in the anterior uterine surface and pulling the ends of the tubes through the slit and suturing in place with silk.

The question naturally arises whether or not we are justified in sterilizing the patient after Cæsarean section. In my opinion, except in grave systemic disease we are never justified in sterilizing the patient at the first Cæsarean operation, because she may desire another child and can safely undergo another similar procedure. Thereafter if requested by the husband and wife sterilization would seem justified.

Another question is whether it is safe to allow the woman to go through normal labor after she has had one Cæsarean section: I have had several patients who had normal labors after Cæsarean section, consequently the test of labor should be given in all such cases unless it is known that in the previous Cæsarean operation of the uterine or abdominal incision became infected or that the patient had a febrile temperature after the operation was performed.

Walker Gossett: From the remarks made by Dr. Peak, one might naturally infer that Cæsarean section is a very simple operative procedure. Such a belief is not in accord with the opinions of some of the most prominent obstetricians and surgeons in this country. DeLee, of Chicago, states that five-hundred women die annually in the United States alone from Cæsarean section. We seem to be getting further and further away from obstetrical ideas, the modern trend of thought being to regard labor as a pathological process rather than a physiological one, and in these days of modern so-called ultra-scientific practice the aid of surgery is too often invoked in ordinary labor cases. A medical man remarked to me a few days ago that so many changes in practice had occurred that he hardly knew what to do when called to attend a woman in labor. I understand some of the medical colleges are contemplating the abandon-

ment of the department of obstetrics and making it the department of gynecology and obstetrics. I believe that would be a mistake as such teaching would tend to place greater stress on operative work in obstetrics, including Cæsarean section, and minimize the importance of ordinary methods of delivery which of course embraces the use of forceps when indicated.

Lynch, of the University of California, states that in these days of rush and bustle in the practice of medicine doctors do not like to wait for nature to terminate labor, that they have not the time and cannot afford to spend twelve to fourteen hours awaiting the advent of labor. The tendency is to wait a few hours and if there is then no progress measures are instituted to hasten delivery. Five years ago a medical man in this city who is a surgeon, general practitioner and pediatrician, was called to see a young woman in her first confinement. He waited eight hours and then decided to perform Cæsarean section. He became much perturbed because of the delay and instead of delivering the woman by version or forceps application, he resorted to immediate Cæsarean section. Two months ago I delivered that woman with forceps of an eight pound girl. There was no pelvic contraction or deformity and labor progressed normally. The patient made a beautiful recovery, just as good in fact as though she had never been operated upon.

Austin Flint says there is a growing conviction that Cæsarean section is being performed too frequently and for insufficient reasons because of the belief that it is an operation which can be easily performed, yet in the hands of the best men in the country it carries a mortality of from two to five per cent. The indications for Cæsarean section have been unwisely extended, the operation is being performed in many instances where delivery could be successfully accomplished by less dangerous methods, simply because the attendant does not like to wait for the normal progress of labor. Those who engage in the practice of obstetrics must give the necessary time to their patients, they must return to the older obstetrical methods so far as may be requisite to secure the proper results, and in that way their patients may be safely delivered and Cæsarean section avoided.

We all recognize that a deformed pelvis as a rule is a valid indication for Cæsarean section, but as Dr. Speidel wisely says even in such cases the woman should be given a chance by the test of labor before the operation is recommended. Pelvic deformity can be easily recognized by physical examination, and by use of the roentgen-ray one can see the size of the baby and particularly the size of the head, and by comparing the data thus obtained with the pelvic diameters easily determine whether or not Cæsarean section is actually necessary. If the

baby's head is small and the pelvic deformity be not too great normal delivery may be possible.

Placenta previa centralis is oftentimes an indication for the Cæsarean operation. In such cases there is usually an undilated cervix, and if the necessary time is taken to properly dilate the cervix the woman may lose her life from hemorrhage. The safest plan for both mother and child is immediate Cæsarean section.

In puerperal convulsions I believe medical treatment should be given a fair trial before resorting to Cæsarean section. However, if the woman has had repeated convulsions and has an undilated cervix, in the majority of cases I would seriously consider the advisability of Cæsarean section. This offers the best chance of saving the life of the mother as well as the child.

Dr. Speidel said that generally there is a soft, dilated cervix in the last month of pregnancy. I recently saw a woman who had passed the eighth month of uterogestation. She had an undilated cervix with a transverse presentation. In that case Cæsarean section was performed on my recommendation.

In my entire obstetrical experience I can recall but five cases in which I believed Cæsarean section was necessary. Dr. Peak says he has performed the operation fifty-five times. I would like to know if, in his cases, he has consultation with an obstetrician, and whether Cæsarean section was recommended by the obstetrician or only by the surgeon. My belief is that Cæsarean section is strictly a surgical procedure and not an obstetrical operation. Of course I recognize that a man who has practiced surgery and also obstetrics for many years is perfectly capable of performing Cæsarean section, but a man who has practiced only obstetrics and general medicine has no right to attempt the operation because it is by no means a simple undertaking. Before the general surgeon performs Cæsarean section I believe he should have the consent of the obstetrician in the case.

As to the delivery of women with serious cardiac lesions: It is remarkable how well these patients get along during labor under gas-oxygen anesthesia. I have delivered women in the sitting posture in bed in the old days without any trouble whatever following. I would not think of recommending Cæsarean section simply because the woman had a cardiac lesion or tuberculosis. Such patients do wonderfully well under gas-oxygen anesthesia and can be safely delivered in the normal way.

I still think it is bad teaching to recommend Cæsarean section in cases where the indications are not definite and positive. Young men just entering practice know that Cæsarean section is frequently performed for trivial causes and a pernicious situation is thus created. These men are not going to be obstetricians, they are going

to be surgeons, and are not likely to devote the time to obstetrical work that they should, which I think is a very bad feature.

It may be worth mentioning that Cæsarean section is rarely performed in Canada. The indications for the operation in that country appear not to have been so widely extended as in the United States. Cæsarean section is a major operation, not a simple and easily executed surgical procedure as might be inferred from the address made by Dr. Peak.

Simrall Anderson: I thoroughly agree with Dr. Peak that Cæsarean section is a simple operation. I also agree with Dr. Gossett that Cæsarean section is often performed under insufficient indications. As both Dr. Gossett and Dr. Speidel have said, the presence of moderate pelvic deformity is surely not an indication for Cæsarean section, always, and if the woman is given the proper amount of time nature will accomplish delivery often when the outlook is very poor.

In placenta previa if the membranes can be ruptured and thus allow the fetal head to descend and act as a tampon from above, hemorrhage will be arrested and delivery can be accomplished in the normal way in many cases,—not forgetting the use of the vaginal tampon also. If placenta previa centralis exists and the diagnosis can be made early and if hemorrhage is distressing, especially in primiparæ and the so-called rigid os cases, I believe Cæsarean section is the best method of delivery.

In eclampsia I am not thoroughly convinced that Cæsarean section is always the best and safest procedure. However, I must admit that it should always be considered. There are cases in which convulsions do not cease even after the baby is born, and these are usually fatal. Of course in the majority of instances the symptoms subside after delivery.

As to the presence of tumors which interfere with delivery: If the tumor is recognized prior to the time of labor, exploration may reveal an ovarian cyst, intraligamentous cyst, pedunculated myoma, etc., which can be removed surgically without interfering with the pregnancy in any way. Quite recently I operated upon a woman from Pineville, Kentucky, who had a large mass in Douglas' cul-de-sac and was in the third month of uterogestation. In referring the patient, her physician stated that the tumor appeared to be very movable and he had been able, after considerable time and various manipulations in the knee-chest position, to dislodge the growth upward out of the pelvis but it could not be maintained there. I also found this to be the case on examination. After due consideration I concluded the proper thing to do was to operate, and if the tumor was of the type mentioned removal could be accomplished without interfering with gestation. Our working diagnosis was ovarian cyst. Abdominal section disclosed the pres-

ence of an ovarian cyst the size of a large orange incarcerated in the pelvis. Removal was simple. Pathological examination showed the cyst to be dermoid containing bone and a large ball of hair, the fluid offensive and yellow in color. On investigating the subject I found dermoid cyst fluid very infectious, and should rupture occur during delivery, fatal peritonitis would ensue. In this case the cyst was removed without rupture and pregnancy has proceeded so far, the woman being now about seven months advanced.

Again I want to state that Cæsarean section, provided the proper technique is employed, is very easy indeed, and, as stated by Dr. Peak, there is usually no hemorrhage except from the placenta which need occasion no alarm.

If pituitrin and ergot are to be given after Cæsarean section, it is better to wait until after the suturing is completed. Pituitrin is very useful in minimizing the excessive gas distension which always follows this operation.

A. D. Willmoth: One of the most important uses of the roentgen-ray is to determine the size of the fetus prior to delivery, especially of the head, and this can be readily accomplished if stereoscopic pictures are taken. One will also obtain a good idea as to size and conformation of the woman's pelvis, and in this way determine the disparity, if any exist between the fetus and the pelvic outlet.

The question of suturing the uterine incision was referred to by the essayist and some of the previous speakers. That is a very important part of Cæsarean section. If the uterine wall be not properly sutured, there are two dangers which may be anticipated: (1) the raw surface may become adherent to the surrounding structures, omentum, small intestine and parietal peritoneum; (2) the danger of rupture of the uterine wall in the event the woman again becomes pregnant. I think it is universally conceded that the so-called through-and-through method of suturing, that is through the peritoneum and muscular structures in one layer not including the mucosa, is the one most likely to give way if subsequent pregnancy takes place, therefore the tier method of suture is preferable. This makes a firmer support and is less likely to give way should subsequent pregnancy occur. Dr. Speidel spoke of inverting the uterine peritoneum with sutures. That represents nothing new, the method has been in use for a long time and should always be done.

As to the question of sterilization: I think this is a matter that should be determined by the woman and her husband because they are the ones most interested. Personally I would not hesitate to take the necessary steps to produce sterilization after the first Cæsarean section if both the woman and her husband desired it. I can see no reason why the woman should not be

sterilized, provided both parties agree to it.

One of the previous speakers referred to the fact that five hundred women died annually in the United States from Cæsarean section. I think that estimate is very low when it is considered that most Cæsarean sections are performed only as a *dernier ressort*. The obstetrician does not recommend Cæsarean section until everything else has been tried, and every possible effort has been made to deliver the woman without success before the surgeon is called. The mortality depends almost solely on the amount of work that has been done from below, repeated vaginal examinations, forceps applications with trauma of the soft parts incident thereto, etc. Where Cæsarean section is performed in elective cases, without interference or manipulations from below, the mortality should be very slight. In the majority of instances where Cæsarean section is indicated, this fact is not realized, until after repeated efforts have been made to deliver the woman normally, the cervix and surrounding structures have been seriously traumatized, oftentimes the woman is in her home where proper aseptic technique is impossible, and infection has occurred before the surgeon sees the patient. It is in such cases that infection extends to the uterus followed by peritonitis, sepsis and death.

I doubt very much whether abdominal Cæsarean section is always indicated where the cervix is enlarged, elongated and undilated. Many years ago I had occasion to attempt to deliver a woman who had an elongated cervix that would not dilate. In that case a vaginal Cæsarean section was performed and I succeeded in saving both mother and child. That is the only case I have seen in private practice or in consultation in which the cervix was undilatable. I could see nothing to do but split the cervix, deliver the baby in that way, and then suture the incision.

J. Hunter Peak (in closing): I thank the gentlemen for their liberal discussion. The questions that have been raised will be answered so far as I am able to do so.

In regard to the anesthetic in Cæsarean section: I always have the patient thoroughly prepared before she is brought into the operating room and everything ready to proceed with the surgical work before the anesthetic is started. The operation requires only a few minutes, provided there are no complications to cause delay. In many instances I have performed Cæsarean section where the patient would be returned to her room within twenty minutes. In some cases the operation has been completed in less time than that. My remarks regarding the Porro operation refer to a modified Porro, or supravaginal amputation of the uterus, not the classical Porro. I do not believe the latter operation is ever indicated in the class of cases under discussion.

I never administer ergot or pituitrin before or during the operation. In my opinion such medication is unnecessary and may be harmful. After the operative steps have been completed, then ergot or pituitrin may be given, it makes no difference which drug is used. As already stated, I am in the habit of administering pituitrin for several days after the operation. I believe it has a marked influence in preventing gaseous distension and the discomfort incident thereto.

Closure of the uterine incision is ordinarily a simple matter. The tier method of suture should always be used, as stated by Dr. Willmoth. The through-and-through plan of suture is not adapted to closure of the uterine incision. The adhesions described in the case illustrated by the moving pictures shown, in my opinion, were due to the stitch abscess which developed after the second Cæsarean section and not to the method of suturing employed.

In many of the cases where I have performed Cæsarean section delay would have merely been courting disaster, something had to be done quickly to save the life of both mother and child. Version in these cases would have been exceedingly dangerous. In the majority of instances the women have borne children subsequent to the operation. One of them had five children afterward. In no other case was there any trouble from adhesions so far as I am aware.

As to the question of sterilization: I do not believe under ordinary circumstances and conditions that the woman should be sterilized during performance of the first Cæsarean section, and I doubt very much whether the woman would want it done. There is a sentiment abroad in the land that sterilization is wrong, and the Catholic churches and Catholic hospitals in this country will not permit it. No surgeon can do anything in any Catholic hospital, if the rules and regulations are followed, that will prevent future pregnancy even during the operation of Cæsarean section, except for two reasons: First, where there has been infection and the woman will die unless supravaginal amputation of the uterus is performed. Second, where hemorrhage is so extensive that it cannot be controlled and amputation of the uterus is necessary to save the woman's life. I do not recall the number of cases where sterilization of the woman became necessary as a life-saving measure, nor how many women have been sterilized in accordance with their request.

In regard to the legality of sterilization: I am aware of no law that would govern in a case of this kind in the United States. As stated by Dr. Willmoth, the husband and wife are the sole arbiters in the matter, and if they desire it the surgeon has the right to comply with their request. However, I would not sterilize the woman unless both she and her husband put the request in writing. This request is filed with the chart

in the hospital and remains there. Even this should never be done until after the second Cæsarean section.

Dr. Gossett seems to think I have performed a great many Cæsarean operations: Until twenty years ago I was engaged in general practice and delivered many women, but during that time I recall having seen only one case in which I thought Cæsarean section was demanded. No doubt there were as many women in those days as at present who required Cæsarean section, but they did not come under my observation. Only during the last twenty years, or since I have been in surgical practice, have I encountered obstetrical cases in which operative work was necessary. As the most of you know, surgical cases are referred to me by a great many medical practitioners. Obstetrical cases have usually gone through everything else except the surgeon's hands and he is called as a *dernier ressort*. I am not an obstetrician and rarely see an obstetrical patient until complications have arisen for which surgical treatment is required.

As to consultation with the obstetrician: As already stated, I seldom see the patient until she has passed through the hands of several physicians. In practically every case the obstetrician has recommended Cæsarean section. Dr. Edward Speidel has been with me in several of the cases where Cæsarean section was performed. Other consulting obstetricians have been Doctors Davidson, Nickell, Hicks, Melton, Crutcher, Beck, and many others. I believe this answers Dr. Gossett's question. The surgeon is not called in obstetrical cases until the necessity arises, and even then he is not going to do any surgery unless it is necessary. I was called in one case by the medical attendant to perform Cæsarean section and refused because I thought it would be safer to both mother and child to do a version. In that particular case I performed version and saved both of them.

I am glad Dr. Gossett mentioned the mortality from Cæsarean section, viz., between two and five per cent. Certainly that is a very small percentage, in fact statistics show that many women die from normal labor throughout the United States. In elective Cæsarean section the death rate should be practically nil.

I cannot agree with the gentleman who stated, the present teaching in regard to Cæsarean section would react unfavorably upon young men starting in practice. If these young men do not know how to perform Cæsarean section, what is going to become of the women upon whom this operation is necessary? If the young men are uneducated along these lines when they begin practice in this country, who will perform Cæsarean section when we older men have passed away? Young men who contemplate practicing medicine ought to know when Cæsarean section is necessary and how the operation should be performed.

The operation is not difficult and the technique is easily acquired.

I agree with Dr. Anderson that abdominal tumors can be removed in many instances without interrupting existing pregnancy: Of course much depends upon the type of tumor. For example, one would not be justified in attempting the removal of a uterine fibroma of the mural type, but subserous tumors can be removed without doing any harm. Ovarian tumors and dermoid cysts can also be removed without disturbing the pregnant uterus. I have on many occasions operated for the removal of tumors of the classes mentioned without interfering with pregnancy, the women being delivered normally at term.

As to roentgen-ray examination: I doubt very much whether the size of the fetus or even the fetal head can be accurately determined by means of the roentgen-ray. Of course the pelvis of the mother can be seen, but the fetal bones do not show perfectly like those of a more mature person.

Before closing I wish to speak further about suture of the uterine wall itself: I never close the uterine wall by through-and-through sutures except under one condition. In incising the wall of the pregnant uterus one is likely to divide a large venous sinus, and hemorrhage from this sinus can only be controlled by closing it with through-and-through sutures. If closed from the inside and then from outside of the uterus, a large space is left and hemorrhage continues. By using what is known as mattress sutures, so placed as to include both sides of the sinus, then passing one end of the suture beyond the knot through the mattress loop on the opposite side and tying it to the other end of the mattress suture, hemorrhage can be effectively controlled and the uterine wall accurately approximated. Under other circumstances the uterine incision should be closed by the tier suture method as has been already stated together with the Czerny-Lembert sutures closing the serous coat.

Osteoperiosteal Graft in Dangle Foot.—Gilmour endorses this procedure and reports one case in which it was employed. He stresses the importance of accuracy in the process of embedding the grafts, and in not having the graft extend beyond the tibial epiphysis and gain an attachment over the epiphyseal cartilage to the diaphysis. This happened in his case. Clinically, there was good fixation at the angle, but a mild degree of equinus deformity due to the freer growth of bone at the front of the tibial epiphyseal cartilage, the posterior region having been fixed down, as it were, by the binding pressure of the grafts.

MASSIVE BONE GRAFT IN UNUNITED FRACTURES.*

By WILLIAM BARNETT OWEN, M. D., F. A. C. S., Louisville.

The etiology of ununited fractures sometimes cannot be definitely determined. First, failure of continuous bony contact is probably the most frequent cause; second, failure of sufficient blood supply; third, constitutional conditions.

There is no arbitrary period when distinction can be made between nonunion and delayed union. After a few months have elapsed and mobility of the fragments increases without any attempt at consolidation, a fracture should be classed as ununited. On the other hand, if there is decrease of mobility after several months have elapsed, this should be classed as delayed union.

There are comparatively few cases of true nonunion. The most frequent is intracapsular fracture of the neck of the femur. Next in frequency is the lower third of the tibia. In such cases the principal cause of nonunion is lack of blood supply. I have never seen true nonunion in an intratrochanteric fracture of the femur, whereas in the intracapsular type nonunion occurs with considerable frequency. The lack of bony contact is due to failure of proper reduction, and interposition of muscle and fascia.

It is the consensus of opinion among authorities on bone surgery that syphilis plays very little, if any, part in preventing bony union. It has been my practice, however, in cases of delayed union in the Louisville City Hospital, to request that blood Wassermann tests be made on all patients with fractures. If the Wassermann was negative, I had small doses of arsphenamin given. When the Wassermann was positive, routine treatment for syphilis has been administered, and in many cases of delayed union rather prompt healing of the bone has taken place. This might have been due to the tonic effect, thereby raising the general vitality of the patient, which would naturally have had considerable bearing on the accomplishment of union. In no instance has a case been classified as nonunion under six months.

Control of fragments and maintenance of reduction are most essential, but absolute immobility is not deemed necessary. Fractures of the clavicle best illustrate this point. Very rarely is nonunion noted in this bone, and absolute immobility is impossible.

In almost all cases of delayed union the ends of the bones have become eburnated.

*Read before the Louisville Medico-Chirurgical Society.

The vascular channels have been closed by the formation of new bone with considerable accumulation of vascular granulation tissue.

The cases in which autogenous massive bone grafts or transplants have been employed have been far more successful than where other methods have been used.

For conservation of time it is important to have two operative teams and two sets of instruments, one to prepare the graft, the other to prepare the field for the transplant. It is hardly necessary to mention that strict asepsis is most essential. Drill holes should be made in the graft before removal from the tibia. A small strip of bone should also be removed to be employed as pegs or bone nails. All fascia and interposed soft tissue should be removed from between the fragments. The medullary canal of both fragments should be thoroughly opened. A small piece of bone should be removed from both ends of the fragments. After proper alignment of the bones a longitudinal incision is made through the periosteum, which should be stripped free, and a flattened surface made on the two fragments of sufficient size to receive the graft.

After the graft has been applied and firmly pinned, the periosteum should be pulled over as far as possible on the edges of the graft. The graft should be carefully surrounded with sufficient muscle and strips of fascia to maintain it in position and assist in re-establishment of the blood supply. It is very important to apply a suitable external splint sufficient to remove all undue strain from the transplanted graft.

Barring complications union may be expected to occur in from six weeks to three months. The usual after-treatment as employed in all fractures is necessary in order to encourage early restoration of function.

In a report of two hundred and twenty-one cases taken from the Mayo Clinic, and discussed by Dr. Henderson, the following information appears:

		Results					
Bones	Cases	Determined	Cures	Per cent	Failures	Not traced	Under Obs.
Femur							
Hip	40	33	19	57.5	14	4	3
Shaft	30	24	15	62.5	9	2	4
Tibia	54	44	36	81.8	8	8	2
Humerus	41	37	26	70.2	11	3	1
Radius	20	15	14	93.3	1	5	0
Radius and Ulna	18	14	12	85.7	2	4	0
Pantella	9	9	9	100.0	0	0	0
Ulna	8	7	6	85.7	1	1	0
Clavicle	1	1	1	100.0	0	0	0
Total	221	184	138	75.0	46	27	10

CASE REPORTS.

Case 1. W. C. R., male, aged thirty-three, was admitted to hospital May 26th, 1926, with the diagnosis of ununited fracture of the upper third of the right humerus. The fracture was sustained five years previously and in the meantime several operations had been performed in the attempt to get union. The patient says he has enjoyed excellent health all his life. Family and balance of personal history of no interest.



W. C. R. No. 1. Case 1, Figure 1.

Physical examination revealed a well-nourished, fairly well-developed man apparently in good health. The only abnormality found was nonunion of the right humerus. Laboratory findings, including blood Wassermann, negative.

Operation, June 12th, 1926. Massive bone

onlay after reduction, application of plaster of paris cast. A plaster spica was applied to the



W. C. R. No. 2 Case 1, Figure II.



W C. R. No. 3. Case I, Figure III.

body a few days before operation and was bivalved. An incision was made exposing the site of fracture, and at the same time Dr. Spurling exposed the left tibia preparatory to obtaining a large graft for onlay. Unfortunately the electric saw was not in working order, hence the onlay had to be obtained by chiseling. Four holes were drilled over the onlay and pegs from live bone chiselled to fit these holes. The fragments were immobilized and good alignment and position secured. The massive onlay was placed on the outer side of the humerus and held in place by the bone pegs. Two ligatures of kangaroo tendon were placed around the humerus to hold the onlay more securely in position. The wound was closed in layers and the arm placed in a plaster cast in position of right angle abduction.

The patient left the table in good condition and his convalescence was uneventful. He was dismissed from hospital September 30th, 1926, still wearing the spica, and was instructed to return to the orthopedic clinic for further observation.



J D. E. No. 1. Case II, Figure I.

Case II. J. D. E., male, aged forty, sustained a comminuted fracture of the lower end of the right humerus when attempting to turn the propeller of an airplane. He had always been healthy. Blood Wassermann negative. He had primarily a Parham-Martin band applied which resulted in nonunion and infection.

At my first examination there was found a discharging sinus and nonunion. This was fourteen months after the operation just men-

tioned. At my first operation the Parham-Martin band was removed and the rarefied bones thoroughly freshened and a plaster spica then applied. After the wound had healed there was still no attempt on part of the fragments to unite. Six months later the massive bone onlay operation was performed. Three months after this operation union was firm, the wound thoroughly healed, and func-



J. D. E. No. 2. Case II, Figure II.



J. D. E. No. 3 Case II, Figure III.



J. D. E. No. 4. Case II, Figure IV.

tion re-established. The last accompanying roentgenogram shows the situation at the end of three months.

This man is an automobile salesman, he is able to drive and manipulate the machine as well as any normal individual. He has no pain and his arm has resumed almost its normal power and function.

Case III. Mrs. T., aged fifty, sustained a simple fracture of the radius and ulna. It was deemed advisable by her surgeon to insert a Lane plate on the radius in order to maintain bony apposition. There was failure of union, rarefying osteitis occurred around each



Mrs. Tanner No. 1. Case III., Figure I.



Mrs. Tanner No. 2. Case III, Figure II.

screw hole, and there was considerable deformity of the hand and arm.

Four months after this operation the Lane plate was removed, the ends of the bones freshened and the canals opened, and the massive bone onlay graft was applied, this having been removed from the tibia of the patient. The deformity of the arm and hand was corrected and a plaster fixation dressing applied.

Re-examination three years after operation showed perfect function in the hand and arm with no deformity. Firm bony union is illustrated by the roentgenogram.

The usual convalescent treatment, which consists of heat, massage, passive and active motion, was instituted in this as in the other cases reported.

DISCUSSIONS.

Orville R. Miller: The cases reported by Dr. Owen are extremely interesting. As he has stated a frequent cause of nonunion of fractures is interference with the blood supply. Infection is another reason for nonunion. A rather peculiar feature is that certain individuals in apparently normal health will have nonunion in the event fractures occur, whereas others whose appearance indicates lowered vitality will have perfect union. In some instances the fact that fractured bones do not unite is inexplicable.

I believe quite often nonunion is brought about by too firm fixation. Personally I have in many instances employed the Grant gimlets or pins in my fracture work. I nearly always leave the pins in situ for two or three weeks, or long enough to be certain the fragments are held in proper position. A plaster cast is applied and this is left intact for six to eight weeks. In some of these cases there has been delayed union, the cause of which I believe was too firm

fixation by the plaster. Some authorities recommend very slight fixation, allowing enough motion to stimulate regeneration of bone cells and callus formation. I have often noticed in roentgenograms made after application of Lane plates considerable callus formation on the opposite side of the bone from the plate. I do not know whether this was due to the effect of the metal in contact with the bone or whether it was because of too firm fixation. There is no question that metal has some effect on the bone. The plate sometimes shows salt-like incrustations and the surrounding bone has a peculiar discoloration.

Unquestionably the bone graft is the best method of treating cases of nonunion. If the Lane plate is used frequently, but probably not always it has to be removed, and sometimes it seems to be the cause of infection and rarefying osteitis around the screw holes. The Grant pins in my experience have caused less trouble and they can be removed when desired without operation. In nonunion I think the bone graft is by far the preferable method of treatment. Henderson in the article from which Dr. Owen quoted also states that leaving a section of periosteum around the massive bone graft, attached to the sides of the bone on each side of the graft and covering it, is also of value although he does believe it is absolutely necessary. To obtain a good union by the bone graft or sliding graft of Albee it is necessary to use all four layers of the bone, periosteum, cortex, endosteum and marrow.

The cases Dr. Owen has reported are certainly splendid examples of what can be done with the massive bone graft. I saw one of the patients a few days ago at the Louisville City Hospital. The man has firm union and a useful arm. The only feature about the case that prevents a perfect anatomical result is that there is some shortening of the arm. This of course is due to bone destruction prior to application of the graft. If the graft could have been applied before any destruction of bone occurred the arm would have been of normal length.

J. Garland Sherrill: The subject of fractures and their treatment is always interesting and always debatable. Any deformity resulting from the treatment of a fracture is always carried by the patient as an advertisement of the surgeon who handled the case.

It seems to me in later years there have been more cases of nonunion proportionately than formerly. The causation of nonunion is variable, but I believe in most cases we can trace the factors responsible for the condition. I disagree with the essayist's statement that syphilis plays no important part in nonunion, on the contrary I believe it is a very important factor. Malposition frequently plays a very small part as a cause of nonunion. In some cases where

there is great malposition perfect union occurs, in others where there is slight malposition delayed union or nonunion may be noted. Interposition of muscle or fascia between fragments is one of the most frequent causes of nonunion. However, that has not always been demonstrated by operation.

I recall one case with a very interesting history. A young man sustained an injury in which both bones of the right forearm were fractured. The usual dressings were applied by the attending physician and the patient allowed to go about with his arm in a sling. Both bones seemed fixed and there was apparently no motion. Eight weeks afterward there was free motion in both bones and the patient was referred to me. One bone was approximated with simple suture, on the other an ivory peg was used. Prompt union occurred in the bone where a suture was used, but in a short time the ivory peg became detached. A Lane plate was then applied which was also unsuccessful. A bone graft was later applied and good union secured. In the meantime the man received vigorous antisyphilitic treatment.

In a few cases after the ends of the bone have become eburnated, after the circulation has been impaired by fibrous tissue formation, the administration of mercury and potassium iodide may help in restoration of the circulation. Of course proper fixation of the bone fragments in the early stages is much better than any other method of treatment. Devitalized bone act as a foreign body and must be removed. The Lane plate is not only a foreign body but in addition there must be some chemical change which takes place in the tissues.

Many patients are seen with fractures where the bone is normal and yet union is delayed, all the factors necessary for regeneration of bone seem to be present, yet there is no tendency for the bone to unite. Some of these patients respond to arsenic and iron. Patients who have taken large amounts of mercury, whether syphilitic or nosyphilitic, sometimes have delayed union. In some cases the administration of phosphorus seems to assist bone formation, in fact it is a good idea to administer phosphorus in small doses in every case where fracture has occurred.

My belief is that of all the methods of internal fixation of fragments in fractures the autogenous bone graft is the best. Of methods which contemplate the use of metal, Grant's gimlets and Parkhill's clamps must not be forgotten. Of the external methods of fixation Grant's gimlets or awls are most suitable. The gimlets may be removed within a short time, not later than the third week, without operation or discomfort.

In fractures of the humerus, clavicle or rib nonunion seldom occurs. The most probable rea-

son is that fixation of these bones cannot be made perfect because of their anatomic situation. Plaster of paris dressings applied to these fractures permit of considerable movement, the circulation is disturbed, therefore delayed union is not infrequent in fractures of the upper extremities so treated.

The subject of delayed union and nonunion is very extensive, and I doubt if anyone can formulate any general rule which will be definitely applicable to every case. Some surgeons place plaster of paris bandages around the forearm in fractures, a method which is no longer looked upon with favor.

I recently had under observation in the Norton Infirmary a man eighty-six years old who slipped on the floor and fell fracturing his humerus at the surgical neck. The closed method of treatment was applied, a Stromyer pillow was employed which permitted him to sit up in bed, he was treated along general lines, and has made an excellent recovery. Sometimes the simpler the method used the better the results obtained.

When we come to complicated cases such as Dr. Owen has described, their management requires a great amount of time, good surgical judgment and infinite patience. In his treatment Dr. Owen used the best and most modern method, that is the application of autogenous bone grafts.

R. Glenn Spurling: In many cases of nonunion we have found there is deficiency in the mineral salts of the blood by which calcium is not deposited at the normal rate. On this basis we have been giving these patients calcium lactate, cod liver oil, and alpine light treatments, throughout their convalescence. In the Louisville City Hospital we see a great many patients with ununited fractures. We have frequently removed plaster casts from fractured limbs at the usual time and found nonunion,—perhaps not typical nonunion, but certainly delayed union. Under the treatment with the cod liver oil and calcium mixture and alpine light when the cast was removed a few weeks later we have found the bones to be perfectly united. Whether the treatment or increased immobilization was responsible for the result we are unprepared to say.

Wm. J. Young: I have been very much instructed by the essayist's paper. I was especially glad to hear him speak of the administration of arsphenamin to patients with fractures and who were suspected of having syphilis. The medical profession has become so certain about the exclusion of syphilis whenever the Wassermann reaction is negative that we are losing sight of all the clinical evidences. We are also forgetting the fact Dr. Owen mentioned in his paper, that we can easily make the therapeutic test by the intravenous administration of arsphenamin. We can with absolute safety institute intensive treatment in a nonsyphilitic just as

well as in the known syphilitic. There is no reason at anytime in clinically suspected syphilis whether it be in bone or elsewhere why we cannot employ arsphenamin with the same degree of safety as in known syphilitic patients. This is a point well worth bearing in mind.

Wm. Barnett Owen (in closing): I thank the gentlemen for their generous discussion. It has long been my belief that too many operations are being performed primarily in the treatment of fractures. In many cases coming under my observation, while union was very slow, it finally occurred after several months. In a number of cases of fracture of the femur, braces were applied and the patients allowed to walk, and unquestionably the motion stimulated osteogenesis. In two of the cases mentioned in the paper, I believe union could have been secured without operation. In one the Parham-Martin band was used, the other was a case of five years duration. Both patients had been operated upon primarily.

We have had some cases in which from the viewpoint of the roentgenogram the fractured arms looked considerably crippled, but the functional result was perfect and the carrying power normal. A good functional result seems to me preferable to a good roentgen-ray result. On the other hand, cases have been observed in which the roentgen-ray findings were perfect, and yet function was more or less impaired.

I have always held the opinion expressed by Dr. Sherrill, that syphilis plays quite an important part in the prevention of union in fractured bones. That is why in all suspicious cases,—and in some that were not even suspicious.—arsphenamin has been administered, and these patients have been greatly benefited, the fractured bones finally uniting without operation. I recall one case in particular, a girl from the country with a fracture which had showed no signs of healing after six months. She had a compound, comminuted fracture of the leg just above the ankle joint. She was admitted to the Louisville City Hospital, arsphenamin was administered, the bones united without operation, and she now has firm union and good function.

I am very much opposed to the Lane plate as a routine measure, in fact have removed many more such plates than I have ever inserted. I have never used the Parkhill bone clamps, but have removed seven. Foreign substances should be used in fractures in or near joints where it is absolutely necessary to have proper apposition and replacement, which can not be accomplished otherwise. In some of these cases phosphor-bronze or silver wire has been used and I have never regretted it. In two instances kangaroo tendon had to be removed, in one eighteen months and in the other ten months, after operation. The tendon had become completely encysted and there was no attempt at absorption. Have abandoned the use of kangaroo tendon.

TULAREMIA, REPORT OF SEVEN CASES.*

By C. N. KAVANAUGH, M. D., F. A. C. P.,
Lexington Clinic, Lexington.

Tularemia is an infectious disease caused by bacterium tularensis. Primarily it occurs in nature as a fatal bacteremia of wild rodents, especially rabbits and hares. Secondarily it is a disease of man transmitted from rodents to man by the bite of an infected blood-sucking fly or tick, or by contamination of his hands or his conjunctival sac with portions of the internal organs or with the body fluids of infected rodents, flies or ticks.

McCoy and Chapin first discovered this organism in 1911 as the cause of a fatal epidemic among the ground squirrels in Tulare County, California and gave it the name, bacterium tularensis. The disease is named tularemia on account of the presence in the blood stream of the causative organism, bacterium tularensis.

During 1912 McCoy and Chapin made the first reference to laboratory cases of this infection. They reported complement fixation and agglutination of bacterium tularensis by the serum of Chapin and a laboratory attendant, both of whom contracted tularemia while extensively engaged in handling or dissecting infected rodents, thus identifying tularemia serologically in the human being. The first case of tularemia on record to receive bacteriologic confirmation was one that occurred in 1913 in the ophthalmic practice of Dr. Vail of Cincinnati, Ohio, and was studied culturally by Wherry and Lamb. Later Wherry and Lamb isolated the germ from cotton-tail rabbits during an epidemic in southern Indiana. Finally, in 1921, Francis, after extensive investigations, described the disease and called it, "Tularemia, A New Disease in Man."

Tularemia is a new disease of man that has been discovered in the past fifteen years, and the only one that has been worked out from the beginning by American investigators. E. Francis has reported human cases occurring in twenty-nine states from the Atlantic to the Pacific coast and from the Canadian to the Mexican borders.

The incidence is governed to some extent by the game laws and the prevalence of the louse, *Haemodysus ventricosus*, among rodents, which is capable of transmitting the infection from rabbit to rabbit, and the seasonal prevalence of the blood-sucking flies of the species (*Chrysops discalis*) commonly found on horse, which also bite rabbits and man; and wood-ticks of the species (*Dermacentor andersoni*).

*Read before the Kentucky Midland Society.

soni stilis), whose bite transmits the infection from rabbit to man. The cases herein reported from Central Kentucky all contracted tularemia from handling dead rabbits during the open season and at the present time there is no information available as to the source of the infection among rabbits. It is generally known fact that rabbits have died by the hundreds during the past eight or ten years in this vicinity from an "intermittent plague" of unknown etiology. The rabbit house and tie are most probably the infecting host.

Bacterium tularense, the cause of the disease, as described by Francis, "Is a small, pleomorphic organism occurring in bacillary coccoidal forms, both in tissues and in cultures; a bipolar form occurs in certain cultures. The organism is gram-negative, non-motile, and non-spore bearing; it grows only under aerobic conditions; its optimum PH range is between 6.8 and 7.3; it ferments glucose and glycerol, forming acid but not gas. It grows well on coagulated egg yolk and glucose cystine agar, but not on ordinary laboratory medias such as plain sugar agar and plain bouillon. Additional efficient medias are serum glucose, agar, glucose blood agar, and blood agar, each having been enriched by rubbing over its surface a piece of fresh sterile rabbit spleen which is allowed to remain on the medium. In cover glass preparations from tissues and cultures the organism stains with ordinary dyes, but preferably with aniline gentian violet. In sections of tissues it stains well with Mallory's eosin and methylene-blue and with Giemsa's solution, preferably the latter. Sterile Berkefeld filtrates of virulent cultures are non-toxic to guinea pigs. In three of eight attempts it passed through Berkefeld filters which held back a small staphylococcus."

Pathology in Man. Very little is known of the pathology in the human. Verbryche's autopsy report of a fatal case in man is the first and I believe the only necropsy report on record. I will describe only the characteristic lesions. The lower lobe of the left lung had scattered throughout its substance a number of hard, irregular but discrete nodules of varying size. On section, these nodules were fibrinous and white, and did not seem to be surrounded by an inflammatory area. They varied from the size of a walnut to that of a shot. The right lung presented the same picture as the left with more extensive involvement in the upper lobe. The liver was not remarkable. The spleen was somewhat larger than usual, and was unusually soft. The pulp was a dark chocolate brown and almost semi-fluid in consistency. Scattered over its surface, as well as through its substance, were

many small circumscribed, well defined, hard, yellowish white nodules. Tissue examination: A section of the spleen showed marked degeneration of the spleen pulp with areas of necrosis and definite increase in the fibrous tissue trabeculae. The blood vessels were rather markedly thickened, and some of the degenerated areas were filled with extravasated blood. There was also a marked lymphocytic infiltration, and much pigment was present. Sections stained for tubercle bacillus failed to reveal the organism. Sections of the lung showed many areas of necrotic degeneration, which were apparently caseous, containing much granular debris and surrounded by a thin and irregular zone of small lymphocytes. No giant cells were present. There was also a very definite thickening of the blood vessels. Some of the necrotic areas were partially enveloped in a capsule of connective tissue. Sections stained for tubercle bacillus failed to reveal any organisms.

Subcutaneous approaching chronicity characterizes the lesions in man. This applies to the primary ulcer at the site of infection, the subcutaneous nodules in the course of the lymphatics lying between the ulcer and the glands, and to the internal organs—spleen, liver, lungs and adrenals.

Microscopic sections show many miliary and confluent areas of granular debris and polymorphonuclear leucocytes surrounded by zones of epithelioid cells and fibroblasts in radial arrangement with an outermost zone made up of a dense inflammatory exudate in which lymphocytes and plasma cells predominate. The fibroblastic zone often contains many large giant cells resembling the Langhans types.

The granulomatous type of the human lesions corresponds to the subacute clinical course, typical of the disease in man.

Four clinical types are described: (1) Ulceroglandular, the primary lesion being a papuli, later an ulcer of the skin and accompanied by enlargement of the regional lymph glands; (2) Oculoglandular, the primary lesions being a conjunctivitis and accompanied by an enlargement of the regional lymph glands; (3) Glandular, without primary lesions but with enlargement of the regional lymph glands; (4) Typhoid, without primary lesions and without glandular enlargements.

Six of seven cases reported in this paper are of the ulceroglandular type, the other being the typhoid type. All seven cases received their infection from preparing rabbits for food. No cases of the glandular type without primary lesions have come under my observation.

The average period of incubation definitely determined by Francis in 49 cases was

slightly over three days. Incubation period in the seven cases reported herein was six, five, three, two and two days and two unknown. The onset is sudden, often occurring while the patient is at work, and is manifested characteristically by headache, vomiting, chilliness, chills, aching bodily pains, sweating, prostration and fever.

In the ulceroglandular cases the majority of the patients complain within 48 hours after the onset of pains in the area of the regional lymph glands which drain the site of infection. On examination these glands are found to be tender and slightly enlarged. Within 24 to 36 hours after the onset the site of infection becomes manifest as a painful, swollen, inflamed papule which breaks down, liberating a necrotic core or plug and leaving an ulcer about three-eighths inch in diameter, with raised edges and having a punched-out appearance; on healing the ulcer is replaced by scar tissue.

There is redness of the skin overlying the enlarged and tender lymph glands; this redness may be continuous from the site of infection or there may be red-streaks visible on the extremity. In about half of the cases the lymph glands suppurate, an abscess rupturing through a soft, thin spot in the skin. Suppuration of these enlarged glands has occurred as late as the tenth month. In the other half of the cases the glands do not break down, but remain hard, palpable, and rather tender for two or three months, gradually returning to normal. In one of the reported cases a large tender gland was present in the axilla after two years.

Weakness, loss of weight, recurring chills, sweats, and prostration are often noted during the active stage of the disease, which lasts from two to three weeks.

The symptoms in the glandular type are the same as above with the exception that there is no primary lesion.

The oculoglandular cases follow the general description given above but with primary inflammation or ulcer in the conjunctival sac instead of the skin. The constitutional reaction is generally more severe and may be accompanied by convulsions, delirium and stupor. In the early stage the eye manifests irritation, weeping, swelling of the lids and surrounding tissues, edema of the ocular conjunctiva, and usually a papule on the conjunctiva of the lower lid. At the same time there are swelling, tenderness and pain in some of the following lymph glands: preauricular, parotid, submaxillary, anterior cervical, and, in severe cases, in the axillary group. Small discrete ulcers appear very soon on the conjunctivae of both lids. No involvement of the sinuses or permanent im-

pairment of vision is noted.

In the typhoidal type, fever was the only outstanding symptom. Prostration, recurring chills and sweats occur as in glandular types. There is no initial lesion or glandular enlargements. Following the initial fever, which lasts one, two or three days, this is followed by a secondary rise to the original height, after which there is a gradual decline to normal, the whole febrile period lasting from two to three weeks.

Convalescence is slow. It is rare for a patient to be at work again at the end of a month; usually the second month is spent lying about the house owing to weakness on exertion, and during the third month only half-time work is performed. Some have not entirely returned to normal for six months or even a year. Recovery finally occurs without evident sequelae.

In the series herein reported one case has not entirely recovered over a period of 34 months; another is incapacitated from any exertion after a period of 14 months and one case died after a stormy convalescence over a period of one year. Recurring mild attacks of fever lasting from six to eight days have been noted.

Tularemia is probably widely distributed among rodents, especially rabbits and is probably transferred to man more frequently than heretofore reported. Only one of the reported cases in this paper was primarily diagnosed tularemia and this holds true with a great many of the cases heretofore reported in medical literature. With the increased facilities for diagnosis and the more recent alertness by the profession for the recognition of the clinical symptoms, tularemia is no longer a rare disease.

Tularemia should always be borne in mind in cases of septic infection, fever of unknown origin and in cases resembling typhoid, "flu", "glanders or farcy", sporotrichosis, and anthrax, especially if occurring during the seasonal incidence of this disease. The diagnosis is made easy if the following clinical syndrome is borne in mind:

1. A history of having dressed or cut up a wild rabbit or having been bitten by a tick or a fly.
2. A primary lesions of the skin in the form of a papule followed by a persistent ulcer.
3. A primary conjunctivitis followed often by ulcers of the conjunctiva.
4. Persistent glandular enlargements in the region draining the primary lesion.
5. Fever of from two to three weeks duration.

The diagnosis is confirmed (1) By obtaining an agglutination of bacterium tularense

by blood serum collected in the second week of illness; (2) By isolation of bacterium tularensis from guinea pigs inoculated with material taken as early as the first week from the primary lesion or enlarged glands or blood of the patient. Microscopic examination of cover-glass and cultures taken directly from the patient is useless. The diagnosis is further enhanced if the patient is a laboratory worker who is engaged in dissecting guinea pigs, rabbits, mice artificially injected with bacterium tularensis or if there is a fatal epizootic in wild rabbits.

A negative Widal in a case simulating typhoid fever should immediately suggest the possibility of tularemia and the blood serum should be tested for agglutination and bacterium tularensis. According to E. Francis, "The persistence of agglutinins in the blood of patients who have recovered, however, is a notable and fortunate occurrence, so that the serum from patients who have been well for several years is of great diagnostic value." In his experience no case of tularemia has ever entirely lost its agglutinins for bacterium tularensis; these observations included 12 cases found positive after 18, 14, 10, 6, 5, 5, 4, 4, 3, 3, 2, and 2 years respectively.

CASE REPORTS.

Case No. 1. Mrs. B. P. D., Mt. Sterling, Ky. Housewife, age 33, was seen by me March 22, 1926. Her general health has always been good prior to present illness. On November 17, 1925 patient cut her finger while dressing a rabbit. During the following three days she complained of a painful, swollen papule which rapidly broke down, leaving a punched out ulcer about one-fourth inch in diameter with raised edges and crater filled with yellow tenacious material. On the sixth day while shopping she became weak and dizzy and reached home with difficulty. At this time she noticed pain in axilla and red streaks extending from wound on finger to axilla. During the night had severe chill, vomiting, headache and general bodily aching. On following day was prostrated, temperature 105°, and had drenching sweats during day. Within few days had marked edema of arms and multiple nodules, which seemed to involve skin, extending to axilla. Axillary glands became markedly enlarged and tender. Temperature continued for three weeks ranging from 100 in a. m. to 103-4 in p. m. and accompanied by frequent chills and profuse sweating. There was no suppuration of glands or nodules. After temperature returned to normal patient was confined to bed three weeks because of prostration. At the present time her arm is still edematous, but no glands are palpable. She is unable to exert herself without attack of weakness and

shortness of breath. On physical examination her heart and lungs are negative.

Urine: Acid, specific gravity 1020, color clear amber, albumin I (basis IV).

Blood: Red blood cells 4,540,000; hemoglobin 88%; white blood cells 8,600; color index 0.97; neut. 59%; small lymphocytes 37%, large lymphocytes 4%.

Serum agglutinated bacterium tularensis in all dilutions from 1:10 to 1:320. At the present writing patient is still incapacitated because of weakness and prostration in exertion.

Case No. 2. Mrs. S. D., Mt. Sterling, Ky. Housewife, age 55. This patient was mother-in-law of case No. 1 and she finished cleaning rabbit after Case No. 1 had cut her finger. On November 21, 1925 she had severe chill followed by fever, prostration and aching of back and limbs. She continued for a period of two weeks having irregular intermittent chills with temperature of 103° to 104° and drenching sweats. The third week temperature dropped by lysis; at this period hemoglobin was 58%. During the following three months patient complained of marked weakness. She continued unable to attend former duties without mild prostration until her death one month ago. At this time patient developed fever of unknown origin and after lingering two weeks in a semi-conscious condition died. Autopsy was refused and the relation of her illness to tularemia was not ascertained.

July 31, 1925—blood serum agglutinated bacterium tularensis in dilutions from 1:10 to 1:160.

Case No. 3. Mrs. E. R., Lancaster, Ky. Housewife, age 43, was seen by me June 21, 1926. Patient's health has not been good for past 15 years. She had rheumatism in 1913; acute appendicitis and operation 1913; severe attack of influenza 1918; acute ethmoiditis 3 months ago. She came to the clinic because of chronic coryza.

Three years ago while dressing a rabbit patient stuck small bone in thumb of left hand. About two days later this wound ulcerated, thumb was swollen and at same time also noticed ulcerated area on index and little finger same hand. On the fifth day following initial wound had severe chill while at work, which was followed by temperature of 103 and profuse sweating—ulcers on hand were markedly inflamed and swollen with red streaks extending to axilla. Continued to have intermittent chills, fever and sweats and within week arm was enormously swollen with multiple firm nodules of skin extending to axilla—axillary glands enormously swollen. Necrotic tissue sloughed from wounds leaving ragged punched out ulcers about one-

fourth inch in diameter. About tenth day arm covered with red papules. Patient was confined to bed four weeks during which time had intermittent chills, fever and sweats and great prostration. Was unable to attend to household duties for five months because of swollen arm and weakness. Arm continued swollen to less degree for one year. Was told at this time that she had severe anemia. Patient has never been well to present time because of general malais and weakness and at present time has a coryza which has persisted four months.

Physical examination: Well developed, fairly well nourished, mucous membranes pale. Ear, nose and throat negative except for vasomotor rhinitis. Marked pyorrhoea. Heart, lungs and abdomen negative. Pelvic and rectal examination negative. Gland size thimble left axilla, movable, not tender. X-ray of stomach, colon and chest negative.

Urine: Acid, specific gravity 1010, albumin I, acetone II.

Blood Count: Hemoglobin 58%; erythrocytes 3,880,000, color index 0.76; leucocytes 6100; lymphocytes 43; neutrophils 57; anisocytosis III cells small and pale.

Wassermann: Negative.

Sensitization Tests: Food, epidermals and pollens negative.

July 1, 1926—Serum agglutinated *Bacterium tularensis* in dilutions from 1:10 to 1:80.

Case No. 4. Mrs. M. E. M., Lexington, Ky. Housewife, age 45, whose general health has always been excellent, was seen by me in consultation December 3, 1926. On November 23, 1926 while cleaning a rabbit obtained from the market she received a punctured wound on her left thumb and right index finger as she was breaking rabbit ribs. On the following day these wounds were red, painful and swollen and that evening, 36 hours following injury, she had a severe chill accompanied by intense headache, backache and aching in long bones. On the 26th both wounds presented a necrotic area and discharged a dark blue core; at this time red streaks extended up both arms to axilla and had small painful glands in right epitrochlear region and both axilla. On examination patient appeared prostrated, temperature 105°, pulse 100, respirations 24. There was an ulcer on the right index finger and left thumb about size of pea and filled with thick tenacious yellow material. Right epitrochlear gland tender, size of hazelnut and overlying skin edematous and red. Several glands each axilla size hickory nuts which were very tender. Patient's temperature chart during the first two weeks ranged from 99 to 100 in a. m. and 101 to 102 each p. m. Had chill every three to four days and continued profuse

sweating. Ten days after temperature had returned to normal patient began complaining of painful papule just outside left nostril. Nose became markedly swollen, red and tender accompanied by painful left cervical glands. This ushered in by chill, aching, headache, fever 102° and profuse sweating with moderate prostration. Temperature subsided in about seven days, but punched out ulcer and cervical glands still remain. At present writing patient is still confined to bed and ulcers on fingers have healed leaving scar tissue.

December 10, 1926—White blood cells 7900; red blood cells 4,180,000; hemoglobin 60%; color index 0.71; polymorphonuclear neutrophils 54%; lymphocytes 46%.

December 7th (or 10th day of illness) patient's serum agglutinated *Bacterium tularensis* in dilutions from 1:10 to 1:20.

December 18th: Patient's serum agglutinated *Bacterium tularensis* in dilutions from 1:10 to 1:1280.

Case No. 5. R. C., Lexington, Ky. A solicitor, age 26, who had always enjoyed excellent health was seen by me December 7, 1926. November 20, 1926 patient cleaned a rabbit which he had bought at a nearby store. There was no recollection of abrasion on fingers at this time. December 22nd he was awakened by a severe chill, vomiting, intense headache, and general bodily aching followed by fever. The following day he noticed a small red papule on the index finger of left hand, which was swollen, red and painful. December 24th noticed gland in axilla size thimble which was very painful and tender to touch. Temperature range during first seven days 102° to 103°. November 27th papule discharged dark blue necrotic core with tenacious thick yellow pus, leaving a ragged punched out ulcer about one-fourth inch in diameter. Was compelled to go to work at this time, although was very weak and had profuse sweating on much exertion. On examination he presented the symptoms described above and gland in axilla was size of hen's egg, was very tender and fluctuated. Skin over gland red, thin mass fluctuated. Impending rupture was anticipated and gland mass was removed in toto by Dr. Ray December 17, 1926.

December 8th: Urine: Acid, 1020, clear.

December 9th: White blood cells 9700, red blood cells 3,160,000, hemoglobin 80%, polymorphonuclear neutrophils 53%, lymphocytes 47%.

December 15th: White blood cells 9500, red blood cells 3,950,000, hemoglobin 80%.

December 9th: Blood serum agglutinated *Bacterium tularensis* in all dilutions from 1:10 to 1:320.

Pathological report of examination of axillary gland by Dr. Maxwell follows:

Gross: The specimen consists of a mass of glands measuring 6 cms. in diameter removed from the axilla. The surface of the cut section shows the glands to vary from 1 to 4 cms. in diameter with many small areas of softening and one larger area that shows evidence of extending toward the skin. These abscesses are filled with creamy yellow pus.

Histopathology: Sections show many miliary and confluent areas of granular debris and polynuclears surrounded by a zone of endotheloid cells and lymphocytes. No giant cells are apparent. The lymphoid tissue shows considerable congestion.

Diagnosis: Acute lymph adenitis with supuration (Tularemia).

Case No. 6. Wm. B., Richmond, Ky. School-boy, age 17, was seen by me in consultation: December 17, 1926.

His previous history was not remarkable. On November 29th, 1926 out in town, was taken with sudden severe chill and was so weak and prostrated that he reached home with difficulty. During the night he developed severe headache and was very hot. On the following day he noticed a small, red, swollen, papule, on inside of right thumb, which was very painful. During the day was prostrated, vomited frequently, and complained of severe headache, body aching, pain in right axillary region. Chill followed by fever and profuse sweating. On the fourth day mother opened this large swollen red papule, but obtained no pus. Red streaks were noticed extending from thumb to axilla. A few days later papule broke down, liberating dark necrotic material leaving an ulcerated area size of a quarter. During the first two weeks of illness temperature ranged from 100° to 103° with morning remissions. About third week noticed many firm, raised, red nodules size of pea in skin extending to axilla, a few of which are still present. On examination there was a large granulating ulcer inside right thumb, many firm nodules size of pea which seemed to be in skin, and several tender glands in axilla about size of walnut.

December 20, 1926: Blood serum agglutinated *Bacterium tularense* in all dilutions from 1:10 to 1:2560.

Case No. 7. Mrs. R. L., Cynthiana, Ky. A housewife, age 33, came to the clinic January 3, 1927 for diagnosis and treatment. A history of her previous diseases was not remarkable.

On November 2, 1926 patient noticed a small painful papule, which was red and swollen, on little finger left hand. On November 3rd right epitrochlear gland was swollen, painful and overlying skin was red and right

axilla was tender and painful. This same day had severe chill followed by intense headache, backache, aching in arms and legs, fever 102°. November 5th when examined by Dr. Wood her temperature was 102.5°—patient was prostrated and presented a small ulcer with raised ragged edges filled with thick tenacious material. Right epitrochlear and axillary glands enlarged and painful. Temperature continued 99° to 102° daily with sweats and occasional mild chill. November 7th epitrochlear gland was size hazelnut, tender, soft and seemed to fluctuate. It was incised and no pus obtained and wound subsequently healed without suppuration. Temperature dropped by lysis at end of two weeks, but was followed at an interval of three days by chill, fever 102° and sweating and continued for ten days with average rise 99° to 101° daily. Patient has not been able to do housework since illness. Epitrochlear and axillary glands still remain and ulcer on finger has not entirely healed. During past ten days has had severe night sweats.

January 3, 1927—Urine: acid, 1006; albumin I (basis IV).

Blood: White blood cells 9000, red blood cells 4,480,000, hemoglobin 64%, color index 0.72 polymorphonuclear neutrophils 74%, lymphocytes 26%.

Wassermann: negative.

Stained spread from ulcer showed no organism.

January 7 1927: Blood serum agglutinated *Bacterium tularense* in all dilutions from 1:10 to 1:640.

SUMMARY.

1. Seven cases of tularemia are reported from Kentucky. Six of the ulceroglandular type and one of the typhoid type.

2. A case of auto infection during active course of disease is reported.

3. The persistence of agglutinins in the blood of patients who have recovered, and the fact that *Bacterium tularense* agglutinates the serum from patients who have been well for several years, is of great diagnostic value.

4. The clinical syndrome is characteristic.

5. Histopathology of an axillary lymph gland is reported.

Influence of Roentgen Rays on Coagulation, Glycemia and Calcemia.—Zunz and La Barre examined the blood of rabbits before and after exposure of the splenic region to roentgen rays. It appeared that penetrating rays, which accelerate coagulation, also increase the content of calcium and of glucose in the blood. This is accompanied by rise in blood pressure. Further researches indicated that doses of roentgen rays enhancing coagulation cause an abnormally large secretion of epinephrine into the blood.

BICORNATE UTERUS WITH REPORT OF CASE.*

By A. H. BARKLEY, A. B., M. D., Lexington.

The abnormal development of various organs, while by no means common, are not infrequently met with, perhaps, of all the anomalies encountered, those of the organ of generation occur most frequently. They, as a rule follow well defined lines that govern congenital deviations from the normal in the fetal and infantile body.

In order that a clear idea may be had of these abnormalities reference briefly to their embryo-genesis is necessary. The Wolffian body and Muller's ducts play the most important part in their development, as it is from these structures that the female generative organs are developed. The time at which an arrest in the development of the uterus takes place determines the degree of abnormality. Thus, if the development is arrested before the twelfth week and the ducts of Muller do not fuse together a duplicity of the uterus results. If the fusion of the ducts occur shortly after that period a bicornate uterus is produced, and if the development is arrested or in any way interfered with at a later period the uterus assumes the undeveloped of fetal type occasionally met with in gynecological practice. Other factors sometimes materially retard development of these organs, such as mal-position and an unstable or undeveloped nervous system. Complete absence of the uterus is quite rare and is not always detected during life. The cervix and vagina are subject to the same deviations from the normal.

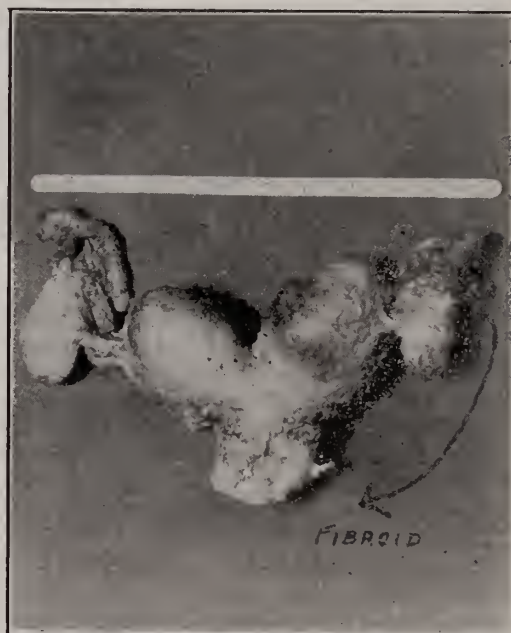
In these anomolous conditions one sometimes encounters cases of superfoetation, as well as those women who menstruate regularly while pregnant, though this latter condition occurs occasionally in women with normal organs.

CASE REPORT.

In June, 1926 Mrs. K., white, age 45, came to me for examination. At this time she complained of indefinite pains in lower pelvic region which radiated into the vagina and down the inner side of the thighs. She had considerable leucorrhoea at the time. The uterus was somewhat enlarged, though nothing irregular could be felt bimanually. The ovaries and tubes were negative, the cervix was very much enlarged, very hard and bled freely when touched with instruments. Just why the cervical tissue bled so freely could not be explained, as there was no polyp at that time and only one small ulceration. There was no laceration of the cervix, not-

withstanding the fact she had given birth to five children.

She had been advised by two other doctors before coming to see me to have a total hysterectomy, and from her age and the condition of the cervix, fearing it might become malignant, I advised the same. To this she declined and went home only to suffer more pain and bleed considerably until she decided to undergo the operation and returned February 9, 1927. At this time her condition was much the same, except she was more anemic and had developed a small polyp which protruded from the cervix about one inch. She was operated upon February 10, 1927, a total hysterectomy was done. Upon opening the abdomen the urachus was found spread out somewhat and considerably enlarged, so that its removal was necessary before complete access could be had to the pelvic organs.



The uterus was found to be double, the divisions being complete, with one cervix. In the left uterus a small subperitoneal fibroid was found which may have accounted for some of the pain. The right uterus was normal, the cervix was the seat of chronic endocervicitis, with marked inflammatory reaction, with an area near the base of the polyp which showed distinct hypertrophy of epithelium but no evidence of migration. Her recovery was uneventful, wound healing by first intention. She was discharged February 25, 1927.

The interest in reporting this case lies only in its abnormality, as over thirty years of surgical practice, the writer has encountered only two cases, the first was reported in this Journal in 1921.

*Read before the Fayette County Medical Society.

FUTURE MEDICINE OF CARLISLE COUNTY.*

By J. F. DUNN, Arlington.

Gentlemen of the Carlisle County Medical Society: I wish to extend my heartfelt thanks to you for this, the highest honor which this society can confer upon one of its members,—that of electing me your president. This is the second time you have thus honored me and I want to thank each and every one of you for the hearty co-operation you have given me. It is this earnest co-operation which has dominated for several years among our members that has made our society one of the leading societies of Kentucky. Here as well as with every other organization, be it medical or non-medical, the old slogan of our state medical society, "United, we stand; divided, we fall," is the key to success.

Gentlemen we are on the decline. Our number is diminishing, our heads are getting hoary, and the time is fast approaching when we must stick together like brothers if we are able to cope with the situation.

We have a fine citizenship here in our midst—a county consisting of a population of approximately 8,000 people, composed of a number of old landmarks, who, by their high ideals have set a standard high enough for all future generations. Also do we have a fine young generation coming on which is a credit to any nation. These youngsters have a much better opportunity at present than of yore. The schools have longer terms, the teachers are better prepared, and there are fewer pupils to the teacher thereby allowing more attention to the individual pupil. The text books are more modern and extensive, which gives the student a much broader view. These students are being taught in our schools the principles of hygiene and health preservation. Why, the average boy or girl of today knows more about what kind of food he needs than we do. He knows how to ventilate, how to bathe, how to preserve his teeth, and many other things necessary to perfect health. Now, with a fine generation like this growing up in our midst, with the foundation already laid, and with a desire to learn everything possible that will keep them physically fit to fight the battles of life, does it not become our urgent duty to lead them onward and give them every assistance possible toward accomplishing their aim?

The future medicine of Carlisle County as well as all other counties in our land is already resolving itself into the problem of prevention rather than cure.

The public, through the medium of the

newspapers, the magazines, the schools, the Red Cross Society, and the radios are being enlightened along health lines at a very rapid pace. Now, while the public is carrying on this great work, what are we doing? To some extent we are asleep on the job and are letting the public get in the lead. We are sitting in our offices waiting for the sick to come to us where we will apply the healing art. It is no wonder that we are slowly losing our prestige. Gentlemen, the time has come when we must awake from our slumber and begin to do the big task just ahead of us. Naturally, all matters pertaining to health and disease should be vested in us, just as the moral side should be vested in the preacher, and the criminal, the lawyer. The public is not attempting to wrest from the preacher, the art of controlling the moral side of our citizens, neither are they attempting to control the criminal side of our nation, but there is a tendency to take from the physician some of the prestige that belongs to him. But, whose fault is it? This public health propaganda that is being given out through the various channels mentioned above is good stuff, and the people are taking to it with great satisfaction. While this information comes indirectly from the profession, yet it is our business and our duty to impart this knowledge to the citizens. Only last night I heard a lawyer from the state of Iowa deliver a lecture over the radio on communicable diseases. In this lecture he told his great radio audience how to prevent the spread of certain diseases; how long the quarantine should be in force for certain diseases, what to do with "disease carriers," etc. While he pretended to give the legal side of the question, yet he went far beyond that. Is it any wonder that the people have become stampered and are running off after the chiropractor and other charlatans, and the newspaper advertisements? I'll tell you the time has come when we must act, and act judiciously.

As we said in the beginning—our number is fast diminishing and we are all getting over on the shady side of life. There are only seven of us in this county doing active practice and the two youngest of us are already up in forty. What will 20 years hence mean to the public in the way of medical attention? How many of us will be able to practice medicine at that time? Probably one or two of us will be able to do light work only. Then, that being the case and as there are no prospects of any young doctors coming into the county in the future, do we not owe it to the people who have faithfully stood by us for the past several years to provide some method that will relieve this embarrassing situation which

*Read before the Carlisle County Medical Society.

is sure to come?

As I see it, this is our greatest problem and it is one which I can not solve. Moses led his people out of the wilderness, which was by far a greater task than we have to perform. While Moses was altogether a different type of man to us, yet it is not utterly impossible for us to deliver our people.

Realizing my inability to offer any solution to this problem, I at least feel that it is high time that this question was being agitated.

This great problem can not be worked out and put into effect in a short period of time, but it may in the course of the next few years, by a cooperation of the doctors and the public, be put on a much higher plane than it is today.

The only hope for the future of our citizens is to learn to stay well, and we should be the teachers.

In the bulletins of the State Board of Health of Kentucky, we are admonished to "Teach the children, today, what we, yesterday, did not know about the causes and prevention of disease, that tomorrow the people of Kentucky may live longer, be freer from sickness and able to carry on the warfare against disease with less opposition from ignorant people who must be protected in spite of themselves."

If the preventable diseases were all eradicated there would be very little sickness. There is much less opposition now to health work than a few years ago, in fact, the people as a whole are in a receptive mood, so it is up to us to hand it to them. But we say how can we do it, when the state is not able to pay for such service? The only way we can do it is gratis, at least a great part of it. But owing to the increase in population, the decrease in doctors, and the great need of such service, I feel that this great work would be a living monument to the medical profession.

We can start this great move by teaching the people, as we visit them in their homes and as they visit us in our offices, the art of staying well. We should stress food sanitation, what to eat and how to eat it, ventilation, the care of the teeth and the skin, and manner of dress. Every home should have a laboratory report on their drinking water and each member of the family should have a private drinking cup. Here is one reason why colds, tonsillitis, and other diseases invade entire families. They all use the same dipper and put it back into the bucket after using. We physicians rarely ever advise having the drinking water tested except in the midst of a typhoid fever epidemic, or some other contagious disease that is water borne. I believe that in making a physical examina-

tion it is just as essential to inspect the water supply as to inspect the teeth and tonsils, and I shall make the statement that no physical examination is complete without it.

The majority of the deaths of infants under one year of age is due to ignorance of the mothers as to how to feed and care for them. The mothers over our country need advice, and this advice should begin soon after conception takes place. During these early months, by taking the proper diet, exercise, rest, etc., the mother can bring forth a much healthier baby, and following up this advice throughout the first year the infant mortality would be much lower.

We should insist on the people taking the typhoid prophylaxis, and all children taking the toxin-antitoxin. Of course, we are already giving these serums to those who come and ask for them, but our duty is to rigidly insist on everybody taking them whether we have an epidemic or not. Timidity often prevents us from doing our full duty. We are afraid the public will think we are after the fee.

All school children should be inspected each year as soon as the schools begin. Their defects should be noted and we should insist that the parents have them corrected. We have already begun to examine some of the schools near us and a card is filled out for each child noting the defects. This card is carried home to the mother, but in most instances she doesn't know what it means. For instance, if the card states that Johnny has diseased tonsils and adenoids which should be removed, the family often believe that the good resulting from such an operation would be that Johnny could sleep better at night and would not arouse other members of the family by his loud snoring. While, if the examiner could talk with the mother personally and relate to her the sequels of such defects, she would see it in a different light, and in the majority of cases have them corrected.

We should also insist on all adults having regular periodic examinations. The importance of such examinations can often be demonstrated when we have an old fellow who has neglected this and has been slipped up on by a stroke of paralysis and his anxious friends are wondering why it came so suddenly when, as we know this was only a climax of a train of symptoms that had been developing for the past several months unnoticed.

Don't understand me to say that all of the service we have referred to above should be rendered free. I believe a part of it, such as the examinations of school children and a few other minor things, should be free, especially charity, but for the remainder we

should charge a reasonable fee, which the people would be glad to pay if we could get them to realize the value of such service.

Now, to those of you who happen to be gifted in oratory let me say that you can do a great work if you will, every time opportunity affords, deliver a public health talk to the citizens, telling them of the future outlook here in our county and insist on their co-operation with one another and with us.

As I look into the future of Carlisle County I can see the approach of a hospital—yes, I can almost get a scent of the ether. It is coming some day and the more we agitate it the sooner it will arrive. This hospital should be located near the center of the county, which of course is Bardwell, our county seat. Then it would be only a question of time when all the roads from the remote corners of the county would be graveled into town. Bardwell would then be considered the great medical center of the county. This hospital could be operated by the few of us who would still be in practice in conjunction with a young surgeon who could be imported and two or three graduate nurses. The hospital should be composed of three compartments—one for charity, another for the average fellow and a third for those who are able to pay for the best. In this manner all classes could be taken care of. Then with hardroads leading in every direction any patient in the county could reach the hospital in thirty minutes, and practically all the sick in the county could come to the hospital instead of having the doctors visit the various homes. In this way fewer doctors could handle a larger number of patients and in a much better manner. This would be much better for the doctors and for the people and every one concerned.

The doctors and the nurses could visit the various schools and make health talks to the children and also to the parents at every opportunity. There could be special days set apart for physical examinations of the apparently well and for giving general advice. All other details could be worked out in due time.

This proposition may seem absurd, but it is not at all impossible. Every great thing that has ever been done had its beginning. I believe that by a united body, consisting of the doctors and the laity, especially the children whom we are training up in the way we will have them go, can put this great move over and prevent the great crisis just ahead of us.

In conclusion, I again want to thank you for this honor and your co-operation, and also wish to say that I shall at all times be ready to extend a helping hand to the future success of the Carlisle County Medical Society.

PRACTICAL INFANT FEEDING.*

By B. M. TAYLOR, Portland, Indiana.

Since the breasts of the first mother failed to function properly in nourishing her infant, infant feeding that is safe, simple and adequate has been a problem that has agitated the minds of the lay and medical profession. The mortality rate in artificially fed infants up to two years of age, the ear marks of poorly adapted food, the anaemia and the disturbed sleep caused by such, the mental sluggishness in school, the physically unfit adult, all point to an inadequate infant food for the first year of age. No one who is even a casual observer can deny or even doubt these facts. The greatest industry of the ages is, and has been, the rearing and feeding of infants and it is passing strange that it and its boon companion or rather forerunner, Obstetrics, have received little more than passing interest from the rank and file of the medical profession. Until McKim Marriott gave to the profession his formula of acidulated cow's milk, the trial of artificial feeding in infants with raw cow's milk has been marked with death, infection, indigestion and the resulting ills. No baby has been fed on raw cow's milk without leaving upon that baby its trade mark. That trade mark is a certain amount of indigestion from a mild to a severe grade. When I speak of raw cow's milk, I mean cow's milk not treated with lactic acid. If anyone will take pains enough to follow up the cases fed on unacidulated cow's milk, or any of the prepared baby foods with a fixed content of carbohydrate, he will find in a majority of them intestinal disturbances evidenced by gas, restless sleep, oftentimes pale, waxy skin and a capricious appetite and a lowered resistance to diseases.

The success of infant feeding or food is not measured by how long a baby lives, whether he survives the bottle stage or lives his three score years and ten; but how well he lives and how few ear marks of unadapted food he has on him. By unadapted food, I mean that food that has not been adapted to the ability of the baby to digest and appropriate and to supply his growing needs. This has been the tragedy of infant feeding. An unadapted food may not kill the baby and he may even fatten on it, but one year's feeding of such food will leave its impression on that baby which he will never live long enough to outgrow. The food has to be adapted to the baby and not the baby to the food. A formula for rule of thumb feeding is like a formula for rule of thumb shoe fitting. A number ten foot will not fit successfully into

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a number seven shoe and vice versa. To prescribe four hundred calories to an eight hundred calorie capacity baby would starve the baby and would be equally as disastrous so far as good results are concerned, as to prescribe eight hundred calories to a four hundred calorie capacity baby. Each would be starved, one with too little food and the other with too much food. The one would lack four hundred calories of food to insure growth, and the other would have four hundred of undigested and unappropriated food to create trouble and prevent the proper digestion and appropriation of the four hundred required. The starvation would be the same. One would be starved for lack of food and the other would be starved with its stomach too full of food. The only difference would be the one who is starved from lack of food will respond to an increase of food quickly, while the other will have to overcome oftentimes, an intestinal pathology caused by the continued indigestion and decomposed food.

The rule of thumb formulae worked out in the laboratory of this or that expert dietitian are very convenient and easy for us to prescribe, but very difficult for the babies to carry out. They will make one thrive and destroy another. One baby will thrive on one form of carbohydrate and another will have gastric disturbances by it. One baby will spit up its food from fermentation with four teaspoonsfull of one carbohydrate in the twenty-four hours and another of equal weight will have a partial carbohydrate starvation on twice that amount. To prescribe a baby food by a formula that is given us and expect that particular formula to work in every case is like and just as sensible as ordering a pair of shoes by mail without taking the foot into consideration. The number may be exactly right, but a bad bunion or a corn or a broken down arch may make the wearing of that shoe not only unbearable, but impossible. These simple illustrations are given to show the fallacy of percentage feeding. The only place where percentage fits in is where things are bought and sold. Infant feeding has to be tailor made with a try on before the sale is completed. If all babies were exactly alike, the same weight, the same inheritance, the same birth hazards, the same prenatal care, the same placental capacity, the same pelvic and outlet resistance, the same endocrine inheritance, the same environment; in fact, if they all had the same capacity and requirements, then the set of hand-me-down formulas could be printed in pads and all we had to do would be to have one brand of food and hand them out. If that were true, as good pediatrics could be practiced from the corner drug store as from the office of the best pediatrician

in the country.

This may seem to you a digression here in this paper, but it is not a digression. It is the most important part of this paper and of infant feeding. It is this. When we speak of artificial feeding of an infant, we usually means that time when it began to use the bottle and was nourished by that food alone. If a child has been taking the bottle for nine months, we think there have been only nine months of artificial feeding. In reality there have been eighteen months artificial feeding, because there have been nine months artificial feeding in utero. This nine months in utero means success or failure in part of the nine months feeding after the child is born. If the mother has not had the proper prenatal care, the child has been poorly nourished in utero and this faulty feeding and poor nourishment will give us at birth a baby poorly equipped for artificial feeding. A mother who has had no scientific care before the birth of her baby oftentimes presents the pediatrician with quite a problem in artificial feeding and even breast feeding. Next to importance in diet in the mother is the endocrine condition of the mother. A pregnant mother who has from four to nine months nausea, who has not enough calcium phosphorous content in her blood to maintain a good set of teeth, who has been the victim of sick headaches, is too fat or too thin, craves candy, a low basal metabolic rate, will not give birth to a baby with a well balanced endocrine system. This presents a problem in infant feeding. A rule of thumb attempt at feeding this baby will not give a baby, a child and an adult physically fit, but will increase the hazards under which it is laboring. A child with a well balanced endocrine system will take punishment from a poorly adapted food much more gracefully than one who has not. These endocrine defects are transmitted from mother to child and oftentimes play havoc in the rule of thumb attempts at feeding the child. Why? Because the lowered vitality of the child from such inherited defects will cause digestive disturbances, which otherwise would not have happened. The very fact that a mother fails to have enough milk for her baby shows conclusively an unbalanced internal secretion. If we doubt this fact, it is not evidence that this statement is wrong, but it is evidence that we have not gone into the study of these conditions. Since I have been giving this subject some thought, I cannot recall a single failure in breast feeding that did not have an endocrine imbalance. In each case the baby presented a problem all its own. Not a single one of these babies would fit a hand-me-down formula for feeding. In artificial feeding, I find the carbohydrate content in the food the

stumbling block over which most physicians fall headlong and causes most babies serious digestive disturbances. The human race is adverse to being driven, but most of us can be persuaded or led. A baby's stomach is a very important part of the individual in the human race. It, too, can not be driven, but persuaded.

When a baby presents itself, then, for the advice in artificial feeding, what is the first thing to consider? I will unhesitatingly say the complete history of the mother from her infancy to the birth of the baby. Was she, herself, a fat or a thin baby; was she slow to cut teeth, to walk, to talk; what age did she menstruate and was it regular or painful; was there no libido; what is the condition of her teeth; was she constipated; how many months was she nauseated; has she suffered with cold hands and feet since childhood; has she had the habit of biting her finger nails; has she had a pain between her shoulders; what was her weight at marriage and what was it after the birth of the baby; is her hair prematurely gray; does she crave sweets? If she answers a portion of these questions in the affirmative, no rule of thumb formula will suit her baby. Her baby may live on most any formula given it, but how well? The main question at issue is what kind of a finished product will we give from the material furnished us? If we can take the baby with these weak tendencies and suit a food to that baby and overcome the weak tendencies and give a finished product worthy of the name, we have done a real service to humanity. To do this, then, we must take into consideration the assets and liabilities of each individual baby. This as stated above can be done only by a complete examination of both baby and mother.

What is the best food for the baby? Mother's milk, of course, when it is properly balanced. When it is not, it is just as poor a food as any other that does not agree. Mother's milk digests in light curds and any artificial food must be as much like this in quality as possible. This is why unacidulated cows milk taxes the digestion of an infant and causes so much trouble is because the curds are tough. If one can secure good Holstein milk with not over 4% fat and put one to two drachms of lactic acid to the quart, adding it drop by drop, he will have the next best and cheapest food he can obtain. If this is impossible, the next best and safest, which may be the best after all is Klim Powdered Whole Milk put up by Merrell-Soule Co. This has the advantage of always having fresh milk at hand and with people who have no fixed residence or who are to visit occasionally this milk is a God send. This milk is the same in

Maine as in California. The content is the same and the mother is always assured of a germ proof milk that will agree with most any baby if the proper amount of carbohydrate is added. This milk has the most uniform stools and the least digestive disturbances of any prepared foods. It is more like mother's milk in curds, in that they are uniform and floeulent. One will not see curds in the stools of an infant fed on Klim with the proper carbohydrate content. After all, this may be cheaper than cow's milk acidulated, because the baby can utilize all the food and waste none in curds. This is economy, both physically and financially. Curds will keep the baby's intestines inflated with gas which impairs their function.

My method of preparing Klim for babies over 2 weeks of age is to restore the whole cow's milk and add just enough malt sugar (Borchers) to suit the baby's capacity to take care of it. If we will take a lesson from nature, we will see the baby taking the same milk from the mother's breast at two months of age as it takes at six. The milk then in either case is undiluted. Why should cow's milk or Klim be diluted? If a baby can digest a food diluted, it can digest it undiluted. The reason we dilute cow's milk, is our attempt to break up the curd, which we do not do. Marriott has the credit of teaching us to break this up with lactic acid. Where most foods fail in babies is we add more sugar than a baby can take care of. This sets up fermentation and the food gets the credit for the disturbance. This is why we have so many different baby foods on the market. I have had babies come into my office which have been on five or six different foods and to all appearances all disagreeing. An examination showed that it was not this or that food, but the baby had been upset by the sugar and as long as this upset continued no food would agree. The sugar would be withdrawn and the fermentation stopped and the baby put on a food with the proper sugar content and there would be no further trouble with the food. This would have been avoided if the proper amount of carbohydrate had been given in the beginning.

To begin with, I use from two to four teaspoonsful of Borchers Malt Sugar, according to the age, in twenty four hour feedings and add the malt sugar gradually until the stools are of a smooth, yellow consistency and soft. This is enough sugar; anymore will show a tendency to ferment. This fermentation can be told by folding the diaper over the stools and pressing between the fingers. If there is slight fermentation, the stools will crepitate. If this fermentation progresses, the buttocks will show redness and signs of

excoriation. No baby will thrive where there is fermentation. As the stools show a tendency to constipation, sugar is added as before until bowel actions are again soft.

Many babies are brought to the physician for advice on account of excoriation. This probably has been going on for months. Others are brought on account of spitting up their food. The problem they present depends on the length of time this has been going on. I know of no better remedy to stop this spitting up the food and excoriation, than Powdered Protein Milk, put up by Merrell-Soule Co. This is given without sugar for several days and then sugar is gradually added and this kept up for a week or until the symptoms have subsided. The baby can then be put back on the Klim.

Carbohydrate should be added cautiously and only enough in the beginning lest a severe fermentation result and a sugar intolerance be created. To illustrate: I was called to see a baby four months of age. It weighed eight and one half pounds at birth. The mother with a thyro-pituitary tendency nursed the baby one month. It was put on modified Klim but with a high carbohydrate content. There was fermentation and spitting up of food. At the age of four months it had gained one and three-quarters pounds. It was as miserable a baby as I have ever seen. It cried constantly while awake. Its buttocks were raw and it showed the part of malnutrition. It had been fed from the first month of age on a formula worked out in a laboratory. The ability of the child and its endocrine inheritance had not been taken into consideration. It was taking six tablespoons of Dextri Maltose in the twenty-four hour feeding. This was the prescribed formula according to the table. It was put on Protein Milk and in thirty-six hours it had almost ceased to spit up its milk. This was kept up for three days and malt sugar added, beginning with one teaspoonful in the twenty-four hour feeding and this gradually increased until three teaspoonfuls in the twenty-four hour feeding were taken. This was kept up for a week and the baby put back on Klim, restored to whole milk and malt sugar was added cautiously. The fermentation had ceased, evidenced by healed buttocks and ability to retain food. After the second week he began to gain in weight, but cried a lot until he had overcome the intestinal pathology caused by three months fermentation. That baby is now nine months old, weighs nineteen pounds, has two teeth, a good color, is perfectly comfortable, cries only to make its wants known and all this was accomplished on the same food that was destroying him, the only difference is the Klim was given at once full strength and

carbohydrate added to suit its ability to take care of it. It can now take only four teaspoonfuls of the malt sugar in the twenty-four hours, the addition of one-half teaspoonful more will cause it to spit up its food. As stated in the beginning, at the age of four months he was taken 24 teaspoonfuls in the twenty-four hours. This caused the upset, because the baby on account of inherited tendencies could not accomodate it. This mother has two children, the older is four years old. The first one was breast fed for two months and put on a well known canned infant food with a fixed carbohydrate content and kept on it. This child, of course, survived but it bears now, and will throughout life, the earmarks of a poorly adapted infant feeding the first year of life. These are the children of a mother with a poorly balanced endocrine system. The history of these mothers is they nurse a shorter time each succeeding baby. Unless the proper prenatal care is carried out in such cases throughout pregnancy, they should not attempt to nurse their babies at all; but put on a suitable diet at first and thus avoid trouble and loss of time. To illustrate further: Twins: One weighed four and one-half pounds and the other six, at birth. There was one placenta and the cord of the smaller child was attached near the margin of the placenta. They each cried at once showing no evidence of cranial hemorrhage. There were six children and the mother, a typical borderland hypothyroid case, had nursed two of these three months. Others all bottle babies. She was nauseated from six to nine months with each pregnancy. There was no libido. She nursed these babies two weeks. These babies were put on cow's milk and Dextri Maltose, each was given the same formula—one weighing four pounds and the other six. They were unable to take care of the curds and the sugar added causing the resulting fermentation and indigestion followed. I saw them at the age of five months. They weighed nine and ten pounds. They cried constantly and were anaemic, restless, distended with gas, their buttocks were raw and they showed a true picture of faulty feeding. There were at the time on Eagle Brand. While on cow's milk their stools were full of curds. These babies were put on Powdered Protein Milk (Merrell-Soule) without sugar for three days and sugar (Borchers malt sugar) gradually added. The fermentation ceased and these babies were put on Klim, as they had no suitable cow, and malt sugar gradually added until the stools were soft, smooth and yellow. These babies became comfortable as soon as fermentation ceased and began to gain. They gain from eight to fourteen ounces per week. They are given Upjohns Syrup Ca-

cium Lactophosphate and one-fifth grain Thyroid extract daily. Had the family doctor recognized the endocrine condition of the mother and had put these babies on a food that each could have digested and appropriated, the picture that I found would have been different. As a result of this mistake in feeding, these babies will always be behind themselves and their longevity will be several years shorter and their earning capacity discounted. This makes pediatries the most responsible of all medicine because the results are so far reaching.

Here is a case of a baby of a mother with hyperthyroidism. She was nauseated nine months of pregnancy. Baby weighed at birth seven and one-half pounds. There were five children and all breast fed except one. This one was nursed one month. It was put on Klim and granulated sugar. The baby gained in weight, but spat up its food and was very restless. It cried constantly while awake. It was constipated. Upon examination I found a baby, age 3 months, weight nine pounds, pale, flabby flesh, gaseous distention. It was getting two tablespoonsful of Klim to the feeding. This was just one-half of the whole milk. The Klim was restored to whole milk and malt sugar added teaspoonful at a time until bowel action became normal. The baby gained a pound in seven days. It ceased to cry, and became contented. This baby was fed by printed formula and was starving to death. As soon as it was fed from the kitchen, instead of from a book it went to sleep. The parents and the physician thought the food was disagreeing with it. In fact they were the ones that were disagreeing with it. The best evidence of an agreeing food is a curdless, soft, smooth, yellow, bowel action free from odor and a baby that smiles and sleeps.

I will report one baby of healthy and well balanced endocrine parents. Age three months. Weight at birth seven and one-half pounds. It was nursed at breast three weeks and weaned on account of sore nipples. It was put on Klim, one-half strength, and eight teaspoonfuls of sugar in twenty-four hour feeding. The baby was restless and fretful on this and the Klim was weakened further, but sugar was replaced by Karo Corn Syrup, two tablespoonsful in twenty-four hour feeding. The baby gained some but cried constantly when awake. The Klim was made stronger, but baby ceased to gain. Upon examination I found its weight ten pounds and seven ounces. Abdomen distended with gas and baby spitting up its food. Its buttocks were raw. Stools green and loose. This baby was put on Protein Milk for three days without sugar and then put on Klim restored to whole milk and malt sugar added gradually

until stools were yellow, soft and smooth. The second week it gained six ounces and in one month's time it gained two pounds and was perfectly comfortable. It now takes seven teaspoonsful of malt sugar in twenty-four hours. This baby takes the required amount of sugar according to age and weight. It has no inherited defects. This baby would have had no trouble in the beginning if it had been put on the proper amount of sugar instead of overdoing it right at the start and the milk made full strength.

If a baby has a tendency to ricketts or has a weak digestive capacity, it will do better from the start on Protein milk or acidulated milk. I have been successful in feeding premature infants on this kind of milk. It seems to suit their ability to digest it and has a tendency to prevent fermentation and this allows them to take more carbohydrates. It taxes their digestion the least and this practices preventive medicine, which means so much to such babies. In every case sugar is increased as the child shows a tendency to become constipated. The bowel actions are to be the guide all the time.

Of course orange and tomato juice are to be given from three months of age. Phosphorized Cod Liver Oil can be given to an advantage. As the child grows other foods are to be given to meet the demands of a growing child.

At about eight months of age cereals can be added to the diet. Cream of Wheat well cooked, Farina, or oat meal are the best of the cereals. Most pediatricians and text books tell us to cook the oat meal in a double boiler for three hours. This means that the baby will get no oat meal. It is well nigh impossible to get a mother to cook anything for a baby for three hours. Good oat meal or Cream of Wheat can be made by cooking over a direct flame for thirty minutes. Add a cup full of oats or wheat to the quart of water and boil for thirty minutes. This can be given once a day. It may be strained through a cloth to get out the husks. As most babies need some iron on account of the tendency to anaemia at this age it is well to add the yolk of the egg to the milk once a day. One can begin with a teaspoonful once a day beaten into the milk and gradually increase to the whole yolk. It is well to leave off some of the milk at this feeding as the full milk feeding plus the egg is liable to make the baby spit it up for a few times. The milk is much richer this way and the quantity may be lessened at this feeding. At one year the whole egg may be given coddled. The egg is placed in boiling water and set off the stove for three minutes. Tomatoes raw, carrots, parsnips and beans (green), well cooked and run through a

ricer may be given at ten months. Beef broth without any fat may be given, Zweibach may be added to this. I think these things can be fed in summer as well as in winter. If the food is kept free from contamination the season of the year has very little to do with infant feeding.

Most physicians are concerned more over the feeding of sick infants than well ones. Just a word in regard to this. Most of our intestinal eases are due to too much sugar or too much fat or infection. The removal of the cause is the treatment of each. With the first two this is easy, but with the third it is more difficult. The first indication is the clearing of the alimentary tract. Castor oil or the milk of magnesium are the things I use, preferring the latter. If this is due to sugar fermentation, as stated above, the sugar is temporarily withdrawn and Protein Milk (Merrell-Soule) used. If too much fat, the fat is, of course withdrawn and low fat content used. I use Protein Milk in these cases. Orange juice should be fed in all these cases. If to intestinal infection, the source if possible should be found and a repetition of the trouble should be avoided. Milk of magnesium is used to clear the intestines and repeated as often as necessary. Food may be withdrawn for twenty-four hours, if necessary. Orange juice given freely and for the food I find not better than the Protein Milk referred to above. (I will add that if there are flies in the house, the napkins should be covered or at once sterilized by boiling. It is difficult to cure a baby of intestinal infection with flies in the room).

These few remarks are made on the sick infant because the feeding of the sick infant is as important as the well and oftentimes concerns us the more.

Infant feeding will never be on a strictly scientific basis until we cease to try to make a machine out of a baby by feeding so much food per pound, or such a dilution according to age. We must forget that there is such a thing as a calorie and put in its stead the sensible thought that the baby has an intestinal tract with only so much digestive and assimilative capacity and to tax this capacity, spells nothing but disaster. If we could sell for each the evil results throughout life caused by one or two years faulty feeding in infancy, the world would be flooded with millionaires. This kind of pediatrics is the result of a scientifically made formula worked out in a laboratory with an imaginary baby as a model. The real baby is the sufferer.

If the baby has a mother with a thyroid deficiency, the main symptoms of which are faulty tooth enamel, headaches, tired feeling, a disposition to skin eruptions, prematurely

gray hair, excessive nausea, the craving of sweets, is too fat or too thin, a basal metabolic rate of less than plus fifteen to twenty-five after three months of gestation, it is well to give her daily at intervals during gestation, Thyroid, Parathyroid and Glycerophosphates or the Syrup Calcium Lactophosphate. This will give her baby a better nervous system, a better bone and will keep the baby above six pounds and under nine pounds at birth. Any baby under six and over nine should be regarded as a hypothyroid case. These babies as a rule have poor digestion and assimilation and a tendency to bow legs and flat feet, and in females a retroflexed uterus. The baby of such a mother should be given almost as a routine Upjohns Syrup Calcium Lactophosphate and if its teeth do not appear in six months, Thyroid extract. This will insure that the baby will have a good tooth enamel and will prevent the premature decay of the temporary and permanent set. This is really preventive medicine in the most classical way; for no one can remain physically fit without good teeth and the necessary blood calcium.

To sum up, examine the mother in the first month of gestation, take care of her needs, know the possibilities and probabilities of the baby physically and select a food as near the mother's milk as possible and add the carbohydrate to suit the baby; in other words, suit the food to the baby and not the baby to the food. If this is done, the babies will be better and happier and old age deferred.

DISCUSSIONS.

L. C. Redmon, Lexington: I can't let this pass without discussing Dr. Taylor's paper. I am not a pediatrician; I can only discuss it from the standpoint of an obstetrician. Having associated with me a pediatrician, I have had the opportunity to watch the progress in the cases of these babies and to study some of their problems. I believe conclusively that the proper pre-natal care of a woman in pregnancy will prevent ninety per cent of the feeding ills that infants are heir to. I mean by that not only the monthly or bi-monthly or every three weeks checking of the blood pressure or the urine of the pregnant woman but going into it a great deal more carefully, checking the weight of the patient, checking the basal metabolism, and watching her tendency to anemia. I find unless a pregnant woman gains during her pregnancy from ten to twenty pounds above her normal weight she is not handling her pregnancy satisfactorily and her baby is going to suffer as a result of it.

I find also that if the patient shows a tendency to anemia and the hemoglobin gets down below normal and the red cells are lower in number, the baby will suffer as a result. In other words, we have to carry the mother along and help her to carry her burden of pregnancy in such a way

that when she does deliver she will be in as near normal condition as possible to carry on the function of lactation.

As to the endocrine disturbances that the pregnant woman is heir to, I have very little to say about that because I know very little about it. It is a big question and we are just now beginning to study it, I think. I do believe that the internal secretions play a rather important process in the problem of lactation.

To my mind, the problem of the pre-natal care of the pregnant woman or the job that the obstetrician has to carry out is more than the routine examination of the urine and the routine taking of the blood pressure.

Basil M. Taylor (in closing): I have nothing to add in closing except that I am sorry I could not report the cases because of lack of time. I had several with an endocrine disturbance showing the fallacy of percentage feeding and trying to suit the baby to the food. I wanted to hear discussion on feeding whole milk to very young babies instead of diluting it to suit the age, as has been taught for thirty odd years. Perhaps I will hear more about it when the article is read in the Journal. Feeding whole milk from the beginning is much easier than diluting it if we will add 120 drops lactic acid to the quart. Klim needs no acid.

GYMNASTICS FOR SCHOOL CHILDREN.*

By **BURTON A. WASHBURN**, Paducah.

It is my intention to present a subject, which I believe will meet with the approval of Medical Societies, and should be of interest to parents and teachers.

The personnel of schools have placed gymnastics foremost, as mental and physical training for children; mental, because it requires a concentration of all their co-ordination to receive instructions, and to execute same with precision and grace. Consideration must be shown children, because the physical development is so unlike in different ones. The same exercise may benefit one child and be harmful to another; therefore, it is my opinion, the kind of training should be left to a doctor selected by the school board, and the doctor's instructions carried out by the teacher of gymnastics.

Why do I make this statement? There are many children who return home exhausted, because the exercises they have been subjected to, have overtaxed them, mentally and physically, reacting as friction to the nervous system. This is not written with the intent to criticize the teacher, because he or she does not hold a diploma as a diagnostician. The school board is to blame for asking the teach-

er to make a physical examination and diagnosis.

Children should assemble in special quarters for physical relaxation, under the observation of the gymnasium teacher and the doctor. Their standing and walking positions will indicate a lordosis, flat back, scoliosis or a normal condition. Every back should be examined for the purpose of ascertaining the proper alignment, and those who show any defect should be placed under the care of the doctor for a special prescribed exercise that will benefit the individual case. Parents will appreciate this kind of care, because they know the value of gymnasium training.

Every school board should feel that there is a moral obligation that they owe the children. Co-operation on the part of the school board with the parents will give the children an opportunity of taking a correct exercise, wherein each will be benefitted.

In normal action the associated muscle groups are so constructed and controlled as to give the most power and perfect mechanical response with the least muscular expenditure. In studying these muscles we recognize the fact that there must be a preliminary, or first position. A second: the movement taken from the first position. A third: the movement of recovery; back to the first or starting position. It must be remembered that the child who has any degree of deformity cannot have a normal muscle action, and if they are given the active exercises, it is performed in an incorrect manner and at the expense of the nervous system.

Gymnastics should have two divisions; namely: physical and mental. A director should have the class before him, making an observation of their development, in keeping with the age and mental powers. In the mental class he should make a note of the child's co-ordination; this is important because the exercise depends entirely upon this brain function. When there is good mental relationship between the taking of the instructions and the execution of the exercise, there is a normal muscle balance and the exercise becomes a pleasure. The instructor should be mindful of this, "avoid over-taxing the child with exercise that is not performed with ease." The teacher has the personal contact with the child which affords him the opportunity to study their peculiarities, whereby a course of instructions can be outlined which best suits the selected case. There are students who will be crippled the balance of their life because of improper instructions. All students who indulge in gymnastics are over-anxious to do their best and because of this they overtax their physical powers, injuring the heart, ligaments, and joints. If a student shows great skill in some one of the athletics,

*Read before the McCracken County Medical Society.

it should not be a guarantee that he is taking care of the intense energy that he is using against his vital resisting powers and unless he is watched, the fatigue that follows the strenuous exercise will injure him and he will go through life a physical wreck with the memory of school honors and sympathy.

When you consider the age of the children and the time of bone development, you must grant that it is proper for the school board to outline a system that will take care of the abnormal cases.

The correct exercise should have the right time and rhythm, whereby a good tone can be given to the muscles and nerves, that stimulates and strengthens.

It is necessary to take care of the child's organs; to maintain the normal relationship anatomically, until they have matured.

WHY THE CO-OPERATION OF THE PHYSICIAN AND THE DRUGGIST.*

By H. B. CHAPMAN, Bardwell.

We wish to mention some of the advantages and benefits the doctor derives through the assistance of a competent druggist, if the doctor will only avail himself of these benefits by co-operation.

In the first place it is professional. The days of the old-time root and herb doctor are gone, just as the old-time pill bag and ox-cart, the three being contemporaneous. No more do we see the herb gatherer with his basket roaming the fields and woods, the ox-cart on the highway or the pill bag thrown carelessly over the shoulder. These were all right in their day, but they have served their purpose. Time has moved on and the profession has moved many stirdes forward.

No doubt if any of you gentlemen were to call at a reputable physician's office in any of our cities or large towns to be treated for any of the ailments common to human beings, and if he, after proper examination and diagnosis, went into another room and proceeded to give you a few tablets or even fix you a treatment in a bottle, you would leave that office disappointed, and with a feeling that you would probably call on some other physician the next time you needed treatment. The physician has lowered himself in your estimation, to say the least of it. You expected him to prescribe for you.

In the second place, it is ethical. The druggist has gone to a lot of hard work and expense to prepare himself for his profession, and his investment is large. He feels that the art of dispensing should be delegated to him.

The physician needs the druggist and the

druggist needs the physician. They need the assistance that each can render the other in the part of protection. The druggist can and should send prospective patients to a doctor, being very careful not to show or have any preference, suggesting to the patient that if the medicine he has called for from the druggist does not give the result expected, he should call a physician before the disease gets too strong a hold on him. The physician, in turn, should prescribe for the patient and send him, or her as the case may be, back to the druggist to have the prescription filled. The physician and the druggist both profit by this transaction—the one when he writes the prescription and the other when he fills it.

The patient leaves the doctor's office feeling satisfied that the doctor has prescribed for him what he really needs, and has not given him what he happened to have in his office or pill bag. In fact, the patient feels that the doctor has given his case some thought, whereas on the other hand he feels he has been dismissed with the least possible thought and trouble.

When the physician stops dispensing and turns to writing prescriptions, for which he should and is expected to charge, he relieves himself of the burden of carrying a heavy stock of drugs, and piling up a lot of bad accounts.

The patient has more confidence in the doctor and the druggist when they co-operate as they should.

There are no other professions that need each other, or that are needed by the public, more than the doctor and the druggist. The patient needs the doctor and the druggist, the doctor needs the patient and the druggist, and the druggist needs the doctor and the patient. So you see it is, and should be, one round of co-operation.

The drug store should be the medium of information between the patient and the doctor. Where the doctor does not have an office girl, the drug store should receive his calls and report to him on arrival. The druggist should keep himself posted, keeping in stock the various preparations that each particular doctor is prescribing. He should keep up on new preparations coming on the market, as to dosage and expected results. He should keep the doctor supplied at all times with prescription pads.

The druggist should have the interest of the doctor in mind at all times, and in turn the doctor should have the druggist's interest in mind.

The druggist stands shoulder to shoulder with the physician, an honorable profession with an honorable background.

*Read before the Carlisle County Medical Society.

Accidents may happen in the bright glare of day, or illness creep in like a thief in the night. Storms may howl and winds blow and all nature seem to be at war, but he stands at his post ready to serve.

He may wait for long periods, but he waits, ready to serve. Pestilence like an invading army may rear its head; still he is there ready to serve.

Within the reach of his hand he carries things little known and things much sought after—always prepared to serve.

By whatever name he may be known: aesculapian, apothecary, pharmacist, or druggist he stands a living embodiment of service to mankind.

THE GROWING PREVALENCE IN THE RURAL DISTRICTS OF ARTIFICIAL FEEDING OF INFANTS.*

By J. T. MARSHALL, Bardwell.

The Journal of the American Medical Association, of August 29, 1925, published a paper by Dr. Frank Howard Richardson of Brookland, N. Y., on "The Universal Breast Feeding in a Community." After reading this paper I was prompted to bring this subject before a meeting, composed as this is, largely of rural doctors, because I believe that the practice of artificial feeding of babies is growing in the country districts, smaller cities and towns; and this paper is written from the standpoint of a country doctor.

Twenty or twenty-five years ago all babies in the country districts were breast fed, the exception proving the rule. At this time, however, artificial feeding was being practiced rather extensively in the cities, and from the cities this practice or fad, has spread to the rural districts, until now we in the country sometimes experience a good deal of trouble in keeping the babies on the breast of normal healthy mothers.

I do not believe that country women live any more strenuous lives now than their mothers and grandmothers did; perhaps they have less actual physical labor, but when the modern conveniences, water works, electricity, etc., on the farms and in the smaller towns, these mothers have more leisure for social pleasures that tend to keep them away from home more and at longer intervals; consequently this probably has something to do with the increasing number of bottle babies we find in the country.

I am not censuring these mothers for their pleasures, but I do not believe that all of them

want to take the time from social duties, to nurse their babies, but find it more convenient to put the baby on some artificially prepared food. It is easier to prepare the baby's food from some tin can and leave directions with the nurse or some member of the family to give the baby the bottle at a certain time, while the mother is enabled to be away from home, than it is to sit down at regular intervals and nurse the baby in the way nature provided. Even when it is absolutely necessary to feed the baby artificially it is easier to use some proprietary brand of milk than it is to prepare the proper modification of cow's milk.

The doctors in the larger cities where this practice of artificial feeding is on a larger scale and has been in practice longer than in the smaller cities, towns and country, are now realizing the detrimental effects of such practice and are endeavoring to correct this mistake. While we have not so far to go to correct this practice, it seems to me the sooner we start out with the idea of seeing that all the women we deliver are impressed with the importance, both to the woman, but more to the baby, who is the future citizen, of breast feeding, the easier our task will be and the fewer bottle babies we will have. Shears (1) says that "In some families the theory that the mother will not be able to nurse her baby is too eagerly accepted." We are taught and we know from practice, that the infant that gets its food from the proper source, that the mother has a more rapid involution of the uterus, and that the baby is rendered immune through the mother's milk to most contagious diseases, and furthermore we know that if a breast fed baby should get sick that its chances for recovery are much greater than the baby that is fed artificially.

Chapin and Pesik (2) remind us that the main points to be kept in mind in infant feeding are: "The infant should be looked upon as a mammary fetus." "The mother's breast secretions are specialized forms of food, adapted to the developing digestive organs."

"Milks of lower animals and table foods are as nutritious as mother's milk but are not adapted to the undeveloped condition of the infant's digestive tract."

"The chemical composition of a food shows nothing concerning its suitability for any animal and is not of first importance."

"The value of foods for individuals cannot be judged by comparing their chemical composition."

"Foods may be chemically right but practically wrong."

"The food element required for all infants are the same, but the form in which they are presented must be determined for each infant

*Read before the Carlisle County Medical Society.

by experiment."

"No infant is a law unto itself except concerning the form in which it prefers its food."

These same authors also state, "That breast secretions are furnished during the time the infant's digestive apparatus is developing, and serve a purpose in addition to supplying nourishment." And they go on and explain that as the infant's digestive organs develop the secretions from the mother's breast change, etc., adapting themselves to the increased development of the infant's digestive organs. We can readily see how difficult it is to scientifically feed a baby artificially. Rickets is more common in the rural districts now than twenty years ago. This is perhaps due to more babies being fed on proprietary foods and partly due perhaps to improper diet of the nursing mother. For a baby to thrive on breast milk, it is essential that the milk be of the proper quality as well as quantity. We know that rickets is brought about by the food lacking vitamin D, and when this vitamin is supplied, either in the food or from exposure to certain light rays, or from the administration of cod liver oil; that this disease is cured, providing to a certain extent that "unhygienic surroundings" play a part in causing rickets. Kerley (3) states that a child fed on normal breast milk will endure and thrive in an environment that typifies "unhygienic conditions." While Forcheimer (4) says, "There can be no doubt that a well regulated breast feeding is the most efficacious plan in the prevention of rickets." And Holt (5) says, "Rickets is not common in nursing children while the artificially fed are prone to it." To quote Starr (6), "Infants suckled by healthy mothers or wet nurses who have an abundance of milk of good quality do not become rachitic as long as their nutriment is derived from this source."

In marasmus, Kerley (7) says, "The usual history in marasmus is that the mother could not or would not nurse her baby, then follows the change to some artificial food with the usual symptoms incident to this condition."

To quote from Dr. Richardson's (8) article, "The greatest difference is found as would be expected, in diseases of the digestive tract; where the ratio is almost 3 to 1 in favor of breast feeding. Respiratory disease shows the next highest variation. Note especially the prevalence of pneumonia and bronchitis among the infants with limited breast feeding. These children are also more susceptible to infectious diseases, especially whooping cough, measles and chicken pox. One third or 37.1 per cent of the children prematurely weaned became sick, as over against only one-

eighth, or 12.5 per cent of those who were nine months breast fed. Three-fourths or 28.4 per cent of these were weaned within fifteen days after birth. Thus the data proves conclusively not only that there is more sickness among children deprived of breast feeding i. e. more widely distributed, but also that a higher percentage of these children are sick. There is sufficient evidence to show that the feeding which a child is given plays an extremely vital part in his claim on health." And I will add on life.

It is the duty of the doctor to impress these facts on the expectant mother and again at the time of the birth of the baby. Holt (9) says, "He should explain to the mother how important breast milk is for the child; that fully four-fifths of the deaths under one year are in infants who are artificially fed. He should also make clear the conditions by which successful nursing can be accomplished, viz., proper diet, regular habits of sleep and exercise, and a simple life, in so far as possible free from causes of nervous excitement, fatigue, overwork or worry. Social engagements should be avoided. Nursing may be furthered by proper care of the nipples before delivery and by attention to them during the early days of nursing to prevent fissures and mastitis, which so often interrupts successful nursing."

It is essential that the breasts be emptied at regular intervals if the mother is to continue to nurse her baby: if the baby fails to accomplish this it then becomes necessary to resort to other means. The best way to do this, according to Richardson (10), "The method of expressing milk from the human breast is merely the adaptation to the smaller anatomy of the human breast of the dairy procedure of milking. The ball of the thumb and the ball of the index finger are placed on opposite sides of the breast at a point just back of the pigmented areola. They are then brought nearly together with the substance of the breast between them and drawn forward at the same time, until a stream of milk is ejected by the pressure thus brought to bear on the reservoir just back of the openings of the ducts through the nipple."

If it is impossible for the baby to obtain enough breast milk for its needs, then we must supply this deficiency by the use of artificial feedings to insure the growth and development of the infant. Or if it is impractical for the mother to nurse her baby, we as doctors should be able to intelligently advise her as to the feeding, and not advise some proprietary food simply because it is convenient or because it is advertised. The mother should nurse her baby, and we should insist

that she does, unless there is some good sound reason for not doing so.

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5. Holt, Diseases of Children.
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ENTEROCOLITIS IN CHILDREN.*

By W. Z. JACKSON, Arlington.

A catarrhal inflammation of the lower portion of the small intestines, ileum, and the upper portion of the large intestines with a great tendency to ulceration of the intestinal glands if the catarrh becomes chronic.

Causes: The affection is most common during the second summer. Improper and indigestible food, artificial feeding, summer seasons, impure air, uncleanness, and exposure are important etiological factors.

It may follow any of the infectious fevers and disorders of the intestinal tract such as diarrhea and cholera infantum. The bacillus dysenteriae of Shiga is often present in the evacuations.

Pathology: The disease may be acute or chronic. In the acute variety, hyperemia, swelling, edema, and softening of the mucous membrane of the ileum and upper part of the colon are present. The intestinal follicles are considerably hyperplastic, their excretory ducts being enlarged and tumid, and really distinguished as grayish or blackish points in the center of the glands. Peyer's patches present the same changes and a similar appearance, often seemingly ulcerated, but true ulceration is absent. In severe cases there may be a pseudomembranous formation. In the chronic variety, the thickening and infiltration involves the submucous and muscular coats producing induration and rigidity of the intestinal walls. Ulcerations occur and extend through the entire thickness of the membrane.

These ulcers, when isolated, are from 1 to 1 1-2 lines in diameter, oval or circular in shape, and either have sharp cut edges, as though the piece of mucous membrane had been cut out with a punch, or the mucous membrane bounding them is undermined.

The small ulcers often coalesce, so that large, irregular ulcerated patches of a grayish white color are formed, having for their base the submucous or muscular coats. The mesenteric glands are enlarged, but seldom, if ever, undergo ulceration.

Symptoms: The acute form may develop slowly with restlessness or fretfulness, or sud-

denly with feverishness, loss of appetite, thirst, nausea, vomiting, abdominal pain, and diarrhea.

The abdomen soon becomes enlarged and tender. The stools are characteristic being small, semifluid, heterogeneous, greenish, acid and mixed with yellowish particles of ordinary feces and undigested case in which give to the evacuation the appearance of chopped spinach. They vary in number from fifteen to thirty in twenty-four hours. The temperature is irregular (102° to 104° F.) and the pulse rate is increased. Emaciation is rapid and pronounced. The chronic form usually follows the acute variety, the symptoms being less severe, but persistent. Loss of strength and emaciation become extremely pronounced. The temper is very irritable; the complexion grows dark, sallow and unhealthy, and the face presents the "old man" appearance; the skin is dry and harsh, and in consequence of the marked emaciation, either hangs in folds around the shrunken limbs or is drawn tightly over the joints; the abdomen is enlarged and tender, the stools numbering from six to a dozen during the day and night, consisting of the products of an imperfect digestion mixed with mucus, serum, pus, and oftentimes blood, having a semifluid consistency, and an extremely offensive odor. Ulcerative stomatitis is a frequent complication adding to the discomfort of the patient.

An irregular temperature record may occur with increased frequency of the pulse. In fatal cases the termination is ushered in with delirium, convulsions, stupor, coma and other symptoms resembling hydrocephalus.

Diagnosis: The distinctive features of this affection are the fever, abdominal distention and tenderness, emaciation and the characteristic "chopped spinach" stools. Cholera infantum may be confused with it, but the rapid onset, high temperature, persistent vomiting, profuse serous stools and early collapse in the former affection will serve to differentiate these conditions.

Prognosis: Enterocolitis is always a serious affection. The acute cases usually subside in from ten days to two weeks, while the chronic forms last from one to three months or longer. Relapses are frequent. In vigorous children who have passed their first dentition the outlook is favorable, but in weak infants surrounded by unhygienic environments, the prognosis is grave. The prompt institution of appropriate treatment favorably influences the prognosis.

Treatment: The patient should be placed in a well ventilated room and kept quiet. First withdraw the food for at least twenty-four hours. Give albumen water and a dose of castor oil, or if the tongue is coated, give

*Read before the Carlisle County Medical Society.

calomel in fractional doses and follow with oil. The use of fluid is essential. This may be given in the form of plain water, barley water, normal saline solution, or weak tea, the latter is of great value in those cases in which stimulation is needed. Sponge fever down.

Diet: After the food has been withdrawn for 12 or 24 hours, the patient should be given a light nutritious diet at intervals of every three or four hours, according to the age of the child. Diet should consist of such as boiled milk, lactic acid milk, barley gruel, rice gruel, oat meal gruel, vegetable soup if fixed properly. If the patient grows weaker they may be stimulated with a little whiskey, brandy, atropine, strychnine or citrate of caffeine in doses to suit the age of the child. The patient should have a dose of castor oil every day for three or more days; should have hot applications used on the abdomen, to help relieve pain, flushing the colon with cold normal saline solution when temperature is high, colon should be flushed once or twice each day. Weak tannic acid solution may be used when the bowels have a loose, lax condition.

HYPOTENSION.*

By H. T. CROUCH, Bardwell.

We understand this term to mean an abnormally low blood pressure. Much more attention has been paid to high blood pressure than to low blood pressure, probably because the power of the former to produce harmful effects is greater than that of the latter. Indeed, there is no consensus of opinion as to what reading should be regarded as low blood pressure, and what I shall say regarding the subject is taken from a few of the writers and teachers on hypotension, and whose studies and wide experience should give them some authority to guide the general practitioner as to what pathological conditions the symptom, hypotension is associated with. The little booklet of instruction sent along by the maker of our blood pressure instruments assures us that the figures that he places as the high and low blood pressure is about the average for the normal adult, male and female during each given decade of life up to 60 years of age, and he quotes some high authorities as proof of the figures given, but Stevens in his recent book on the practice of medicine says, "there is no consensus of opinion as to what reading should be regarded as low pressure, arbitrarily, however one may place the lower limit of systolic pressure in the adult at about 110 M. M. Hg."

The lower limit of the diastolic pressure is even more difficult to place than that of the

systolic pressure, as very often the two pressures do not run parallel. Thus in one case the systolic pressure may be 110 mm. and the diastolic pressure 90 mm. and in another case the systolic pressure may be 90 mm. and the diastolic may be 55 mm. Osler found the blood pressure to vary greatly in different individuals and in the same individual under varying conditions. The normal blood pressure under 50 years is from 120 to 130 mm. Hg. After 50 years, 140 to 160 mm. A permanent pressure above the latter is high, but there are great regional variations. Some old people seem perfectly well with a systolic pressure around 180 mm. Hg. and there are persons in apparently good health with chronic or continuous hypotension around 90 or 100 mm. Hg.

Clinically, hypotension is observed as a symptom in many conditions, such as (1) Shock, both surgical and anaphylactic. (2) Poisoning by certain drugs, such as aconite, chloral, chloroform, ether, alcohol, etc. (3) Many acute infections, (4) Cachexia from tuberculosis, carcinoma severe anemia, etc. (5) Certain disorders of internal secretion as Addison's disease, myxedema, status lymphaticus, etc. (6) Certain cardiovascular diseases, as in myoeraditis and chronic aortitis. (7) Some nervous disturbances, as in some cases of neurasthenia, parietic dementia, and epilepsy. (8) Certain renal conditions as amyloid kidneys and cyclic albuminuria, and other conditions could be added.

Symptoms: Persistent hypotension is frequently associated with dull headache, vertigo, lassitude, and ready mental and physical fatigue, whether these symptoms are an effect of hypertension, or whether the hypotension is the result of the nervous symptoms, or whether both the nervous phenomena and the low blood pressure are dependent upon a common factor, such as some functional disturbance of the internal secretions especially adrenal insufficiency is often difficult to determine (Stevens).

Treatment: The treatment of persistent hypotension varies with the cause. In all cases the patient's habits and method must be carefully reviewed. His diet and ability to digest foods, and his secretions and excretions should receive constant attention. If ready physical exhaustion is the dominant feature, rest is very important, on the other hand, if the tendency is to mental tire, systematic exercise may produce excellent results. In both groups of cases hydrotherapy is said to be invaluable. If myocardial weakness is a factor digitalis is likely to prove efficacious. In the anemic, iron, arsenic and other tonics are useful. Organotherapy is not often of service, although ovarian or cor-

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pus luteum extract may sometimes be given with advantage in hypotension developing at the menopause and epinephrin or an extract of the suprarenal gland may occasionally be of benefit when hypotension is accompanied by features suggestive of Addison's disease. Timme describes a pleuriglandular syndrome characterized by intratemporal headache, great defatigability, low blood pressure, low sugar content, abnormalities of skeletal growth and usually sex deficiencies, in which pituitary gland products cause marked improvement.

COELIAC DISEASE.*

By GEORGE W. PAYNE, Bardwell.

In looking up the literature on coeliac disease I find that it is limited and there seems to be no definite pathology. My experience in the diagnosis and treatment is limited. I have seen one case in the out patient department of Barnes Hospital, and one in my practice that I have been able to recognize. The only excuse I can offer for presenting this paper is that it may be of some help to you and especially to myself in recognizing coeliac disease in the future and putting the patient on the proper treatment which after all is the dieting of these patients as you will see later.

Coeliac disease is a failure to properly absorb the fat of the food, although apparently split by the pancreatic juice, a large excess of the fat in the diet remains unabsorbed. The characteristic features of the disease are: (1) Excess of fat in the stools; (2) enlargement of the abdomen without signs of organic disease; (3) retardation of physical growth and development; (4) anorexia, often of the severest grade; (5) fever either low and persistent or high and transient.

It is not possible in all cases to say when the disease begins and ends, for it is said that even in absence of symptoms fat absorption is below normal. Occasionally, the first symptom is the passage of colorless stools which will appear suddenly towards the end of the first year of life; but more commonly pale diarrhoea (diarrhoea alba) is seen for the first time towards the end of the second year. From this time onward, in the absence of treatment, the symptoms will be seen for many years. In later years in the absence of treatment, some improvement in fat absorption seems to occur. The lack of growth and development leads to considerable stunting, and in severe cases to retard sexual development. Growth continues for many years, and

under proper treatment a normal average height may be reached.

DIARRHOEAL TYPE.

This is the type described by Gee in 1888. The characteristic features of this type is the diarrhoea alba, the stools being very large, unformed, pale, greasy and extremely offensive. They vary from two or three to ten or fifteen daily during the diarrhoeal attacks. On analysis they show a great excess of fat. In these pale stools the bulk of the fat is passed as fatty acid crystals; bile pigment is not absent but is masked by the excess of fatty acids.

Enlargement of the abdomen is a striking feature. This is partly due to the dilatation of the small intestine, but chiefly to dilatation of the colon which is characteristic of this condition. It is due partly to excessive fermentation of food, and partly from the relaxed condition of the bowel wall. Tympanites is present all the time although gas is passed per rectum frequently. These children are pale, anemic, sallow in complexion and haggard looking. Their growth is retarded if the symptoms have lasted long. They are much below the average in height and weight, but their mentality is not impaired. They are usually neurotic and hysterical. The temperature may be low or high, most of them have no fever.

NON DIARRHOEAL TYPE.

It is not so easily recognized as the former type. It differs from the diarrhoeal type in two particulars: (1) The stools although larger than normal are neither pale nor unformed nor offensive; it is formed and colored, and may be dark, hard, and constipated. Yet it contains an excess of fat but the bulk of the fat is present in the form of soap which takes up the color. (2) The symptoms of abdominal enlargement, lack of growth, and anorexia are milder than in the diarrhoeal type.

Treatment: The principles of the treatment is to work out a diet with a minimum amount of fat that will produce satisfactory growth and a complete absence of symptoms. As the child improves on the low fat diet, its appetite will improve and enable more food to be given in the form of protein.

If possible have an analysis made of the stools for fat. It is said that normally there is as much as 10% or 11% of the fat passes through the intestines unchanged. If there is much fat in the stools it can be recognized from the glistening clay like appearance.

Change the diet at once to one low in fat. The diet should be made up principally of proteins. In the beginning put the patient on a skimmed milk diet, unless milk is skimmed by milk separator, boil it for 20 minutes and set it aside for three hours after which all the cream can be carefully removed; or give them

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plasmon which is a powder made of casein in soluble form.

For older children the following diet will probably be suitable, but too rich for very young patients:

Breakfast: Plasmon in skimmed milk or hot water, fish, egg white, lean tongue; toast or bread; no butter; cup of skimmed milk flavored with cocoa, tea or sugar.

Dinner: Boiled fish, lean meat, chicken, potatoes, vegetables, pudding made from skimmed milk, jellies, stewed fruit, boiled rice and raw fruits, no nuts.

Supper: Sandwiches made of tongue, scraped beef or tomato, skimmed milk or tea, rolls or brown biscuits.

After the child has been on this diet for two or three weeks if the diet is correct, the stools should have become better or normal in size; the abdomen smaller; the colon not so much distended; the tongue clean and the appetite better.

The child should begin to increase in weight and height and should be kept on this diet for some time. When the patient is thoroughly stable and doing well a little extra fat may be added every three or four days in the form of butter. If this increase in diet causes distention of colon, coated tongue, loss of appetite and foul stools, leave it off. Some of these patients are extremely sensitive to fats and it can not be increased.

The acute diarrhoeal attacks are seen chiefly in the youngest patients. For these attacks cut out all fats, give water freely, clear whey and barley water until skimmed milk can be given. Bismuth and opium mixtures with colonic irrigations may be given. Alkaline mixtures as rhubarb and soda with bromide if very nervous. Bile salts are very good because they increase the absorption of fat.

Experimental Radium Arthritis.—Glass tubes containing radium were introduced by Fisher into the knee joints of rabbits, and well marked proliferation of the cartilage of the inner and upper margin of the trochlear surface of the femur resulted. The introduction of radium contained in platinum tubes resulted in an acute destructive suppurative arthritis of a fulminating type, which necessitated its destruction. In another rabbit, a condition of chronic anthritis of mixed type, or "rheumatoid anthritis," developed. In a third rabbit, a tumor developed from the lower end of the femur. Histologically, the tumor was clearly an ossifying periosteal sarcoma, which had originated from the periosteum covering the intra-articular portion of the diaphysis and the adjacent portion of the epiphysis of the internal femoral condyle.

DOCTOR R. T. HOCKER AS A MEDICAL SOCIETY WORKER.*

By T. J. MARSHALL, Bardwell.

"He is wisest, who only gives,
True to himself, the best he can;
Who drifting on the winds of praise,
The inward monitor obeys,
And with the boldness that confuses fear
Takes in the crowded sail, and lets his conscience steer."

Doctor Hocker's conscience has been his guide in all his dealing with the medical profession, and being convinced early in life that the surest and best way to keep the profession clean was through the medical society, he lent his influence to this purpose. Before his graduation we find him attending the Southwestern Kentucky Medical Society, being present while still a medical student, at the birth of the above named organization he has never ceased to champion and work for this and his county and state societies; consequently, due to him and his like, we have one of the best county, district and state medical societies in existence, and we of the younger generation owe to such men the highest respect and reverence. It is from such men as Doctor Hocker that we receive the inspiration to carry on.

It was in 1866 that the Southwestern Kentucky Medical Society was started on its way, and as has been mentioned above, with the assistance of Doctor Hocker, while still a medical student, until now, this society ranks with the best of its kind. In 1872 Doctor Hocker became an active member of this society, 1873 he was elected Junior Vice President, 1885 Senior Vice President, and 1887 President, having been elected by acclamation, this being the second time that a president had been elected unanimously in the history of the society up to that time.

In 1877 he was a charter member of the reorganization of the Graves county medical society and was its first Second Vice President, and its second President.

Doctor Hocker was one of the four who organized the Carlisle County Medical Society in 1889, and by and through his efforts this county has one of the best medical societies in the State. He served it as its first and second president, and has held at many different times the various offices in the society, never shirking a duty but always striving for a better county society.

In 1907 Doctor Hocker was elected Historian for the Southwestern Kentucky Medical Society, which position he still holds, and will continue as such until death severs his con-

*Read before the Carlisle County Medical Society.

nection with all earthly affairs.

Whether in office or out, Doctor Hoeker has always worked for the doctors and the profession, always having the highest respect for the medical profession and a heart full of love and sympathy for his brother practitioners.

Doctor Hoeker never did a little act, knowingly, nor countenanced anything mean or little by a fellow doctor, but has always had the highest aims personally and professionally; and by his acts we who are taking up the work where he is laying it down, are inspired to emulate him and to endeavor to keep our medical societies on the high plane on which it now rests, thereby furthering the advancement of the art and science of the practice of medicine, and to keep fresh within our minds the golden rule, and endeavor to promulgate a spirit of brotherly love.

My advice to a young man beginning his career as a physician, would be, read and study the professional life of our friend and colleague, Doctor R. T. Hoeker.

By the life of Doctor Hoeker I am reminded—

"I shot an arrow into the air,
It fell to earth, I knew not where;
For so swiftly it flew, the sight
Could not follow in its flight.

I breathed a song into the air,
It fell to earth, I knew not where;
For who has sight so keen and strong,
That it can follow the flight of a song?

Long, long afterwards, in an oak,
I found the arrow, still unbroke;
And the song, from beginning to end,
I found again in the heart of a friend.

Method for Detecting Reflexes of Pyramidal

Origin.—Sicard suggests a new technic for obtaining reflexes in the lower limbs, characteristic for diseases of the pyramidal tract. While the patient's leg is held firmly with the hand, his foot is moved from side to side; never forward or backward. The movements must be brief and rapid, repeated for about thirty second. The reflex is more evident when the leg and the thigh are flexed. The sign is positive if there is extension of the great toe alone or of all the toes; extension of the great toe and flexion of other toes, backward flexing of the foot alone or associated flexion of the foot and of the leg. The sign was positive in several cases of spasmodic paraplegia of organic origin in which Babinski's reflex and that of Pierre Marie and Foix was negative in healthy persons and in those with diseases of parapyramidal origin.

DOCTOR HOCKER, HIS FRATERNAL AFFILIATIONS.*

By H. A. GILLIAM, Milburn.

You have heard of Doctor Hoeker and his doings in the various positions in life. In a few short remarks I want to tell you something of his work in a fraternal way.

First: He has always been among the first to affiliate with anything that goes for uplift of his fellowman, whether it be his Church, Medical Society, or lodge, he is always ready, and a willing worker.

He was one of the charter members of the Southwestern Kentucky Medical Society, also of Carlisle County Medical Society, and was one of the early members of the Kentucky Medical Society, and is also a member of the American Medical Association. With these he has always played an active part, and is now life historian of the Southwestern Kentucky Medical Society. He has always been a regular attendant at all the meetings of both county and district societies, and his absence would be missed more than any other man. During his association with these organizations, he has formed the acquaintance and friendship of many men of distinction.

Doctor Hoeker is a Mason of the highest type. He has been a member for more than fifty years, and is now a free member. He was made a member of the Palestine Lodge in 1872. He served at various times in all the different offices. From this lodge, he was demitted to Lowes Lodge, where he served as Master, and also in other offices. From this lodge he was demitted to Arlington, where he has served in all the stations, having been Master several times. As a Master Mason he has officiated in the raising of many men, who have risen to distinction.

He conferred the third degree on his son-in-law, and in 1925, while in Louisville, he had the pleasure of conferring the third degree on his grandson.

He is a charter member of I. O. O. F., Lowes, and served in various stations of this noble order with distinction.

As a fraternalist he is always loyal and always ready for anything that is right and just for his fellowman.

*Read before the Carlisle County Medical Society.

AN APPRECIATION OF DR. HOCKER.*

By W. L. Mosby, Bardwell.

Doctor Hocker, it is a genuine pleasure for me as the official spokesman of the Carlisle County Medical Society, to present to you this token of appreciation for your long honored, active connection with our society and the medical profession of our state for so many years.

You have contributed materially to the uplift of humanity by your altruistic devotion to her principles. You have elevated the standard of professional Christian living by a noble example, well worthy of emulation by your fellows. You have "set high" the "ideals" in medicine by your lofty ambition to attain this standard. Your association with the younger men of the profession has indeed been an inspiration to them and no doubt caused many to follow the "banner" held high by you and unfurled to humanity with the inscription, "service" boldly emblazoned thereon.

While your years of service have been many and arduous yet the honor and glory of such a noble career has brought its reward in a knowledge of deeds well done.

Doctor Hocker, this gift has little intrinsic value, within itself, but dear doctor, it represents far more, a principle, a lofty sentiment, an expression of appreciation, deep-seated in the hearts of your fellow members of this society which is very feebly indicated by this small emblem that we so joyously present to you, today, in the name of the Carlisle County Medical Society, and we sincerely hope and trust that it may help to lighten the burdens of the increasing years that may come to you. The beautiful, harmonious curve you observe here is for your convenience and has no relation to your conduct in and out of your time-honored profession and the "straightness" of the staff may well represent the sublime ethical character you have so nobly sustained in the great, humane profession you have so signally honored by your unselfish devotion and service. Dr. Hocker, in the name of the Carlisle County Medical Society, I present to you this cane and trust the joy that cements you in receiving it, may only be equalled or excelled by the pleasure that comes to us in giving it.

THE DIAGNOSIS OF ACUTE MASTOIDITIS.*

By CLAUDE T. WOLFE, M. D., Louisville.

Acute infections of the mastoid are due to virulent organisms and are almost always secondary to infections of the middle ear. It is the exception that the mastoid cells become infected from destruction of the posterior canal wall. It is also probably true that at least ninety-five percent of acute middle ear infections have their origin in inflammatory conditions of the nasopharynx and pharynx.

It is not within the scope of this paper to discuss the part adenoids, tonsils and the acute exanthematous conditions, particularly scarlatina, measles, diphtheria, etc., play in producing localized infections in the nasopharynx; but I might add that with local infection present in this area, bacteria get into the middle ear in the contiguity of the surface of the mucous membrane of the eustachian tubes; or they may be thrown in during coughing, vomiting or sneezing. With the bacteria present in the middle ear they may manifest their presence in a very insidious manner as children have been known to spontaneously rupture both ear drums, with a subsequent discharge of pus, without having suffered from any previous condition. On the contrary, their presence may be manifested by a sudden acute onset with severe pain in the ear. This latter symptom may be looked upon as being specific. The earache is a pressure or tension symptom and is due to engorgement of the tympanic vessels and pressure by the retained fluid in the small tympanic space. Naturally its severity is influenced by the temperament of the patient, but there is perhaps no pain of any disease more exhausting or distressing. Hearing at the onset is more or less disturbed and an early symptom is "stuffy" sensation in the ear. The changes in the drum membrane depend upon the stage of the disease and the site of the infection. At the onset it may be only slightly reddened, later very much reddened and bulging. Temperature elevation of moderate degree is usual. The proper treatment in the vast majority of cases is free incision of the drum membrane which has as its object the providing of free drainage followed by efforts such as the insertion of a gauze wick in the canal or irrigation, to maintain the drainage and prevent the stagnation and accumulation of the purulent material.

At this time I might add that I am a strong advocate of early incision of the drum membrane, and I think if it is done early and efficiently, especially in children, the suffering

*Read before the Carlisle County Medical Society.

*Read before the Louisville Medico-Chirurgical Society.

is promptly ended, hearing is conserved, a chronic process is averted, the great danger of mastoid and intracranial infection is avoided. In this connection permit me to say that for the incision of the drum membrane a local or a general anesthetic may be employed. The incision must not be merely a puncture, but a free opening. In my opinion it is far better to make an early free opening than to wait for perforation. The former heals quickly and no damage to hearing results; the latter heals slowly and may cause adhesions which may result in impaired hearing. Therefore, delayed or inefficient drainage of a suppurative process of the middle ear is perhaps the outstanding cause of the majority of cases of acute mastoid infection. There may be other factors, such as lowered resistance, consequent upon a long or particularly severe illness, etc.

With this rather brief summary of the predisposing causes of acute mastoiditis we will now attempt to discuss the usual points of diagnosis and comment on their diagnostic value. In the uncomplicated, typical case we expect to encounter many of the symptoms which I am now about to enumerate:

First: A history of earache and aural discharge.

Second: Tenderness over certain points of the mastoid, e. g., the antrum, the posterior emissary vein and the tip.

Third: Redness, edema or fluctuation over mastoid process.

Fourth: Condition found more frequently in children than in adults.

Fifth: The auricle protruding from the head.

Sixth: Sagging of superior posterior canal wall.

Seventh: The ear drum bulging, congested or perforated.

Eighth: A discharge of pus, sometimes profuse.

Ninth: Hearing more or less impaired.

Tenth: Average leucocyte count of 13,000 to 15,000.

Eleventh: The roentgen ray picture showing destruction of cell walls or at least a blurred or cloudy mastoid.

Twelfth: The bacteriological examination of the pus usually shows streptococcus viridans or hemolyticus, or pneumococcus.

Thirteenth: Marked fluctuation of temperature, although it may be of moderate degree.

Where all of these points are present the diagnosis is easy, yet each point must be considered in diagnosing a case for operation. I belong to the conservative class and believe that a patient, carefully watched, should be given the benefit of any uncertainty that may be present. Coates believes that an infected mastoid opening in the very early stages of the

disease does not heal as kindly as one where barriers to infection have been formed in the blood and lymph channels, so that delay is not always a disadvantage, and many a threatened mastoid will get permanently well after free incision of the membrana tympani and expectant treatment, and that without damage to the hearing function. On the other hand, intracranial complications when they do occur, are frequently the result of neglect to operate at the proper moment, and even if the mastoid disease itself subsides the patient is at times left with a loss of function due to middle ear damage caused by prolonged suppuration with loss of hearing and danger later, often years later, of intracranial complications, or of chronic mastoiditis with cholesteatoma, which will in the end need a radical operation for safety or cure. Therefore, to delay operation may mean the loss of our patient's life or to say the least, leave him with a defect in hearing, so that with an acutely discharging middle ear of several weeks standing, a mastoid operation may be performed to cure the discharge and in case of great doubt it may be better to operate as the middle ear will be cured and hearing conserved.

We will now consider the value of the diagnostic points mentioned and attempt to emphasize the important ones:

Earache, as a rule is sharp and may come to speedy relief in a short time by rupture of the drum membrane, or may run for several days until relief is afforded by the surgeon's incision. Unfortunately our incision, even though it may be free, does not always give relief, as the incision may close prematurely, or it may not be large enough to relieve pressure. Then the mucous membrane of the middle ear may be so swollen as to prohibit free drainage. Earache, or mastoid pain, must be considered as a serious indication.

Protrusion of the auricle from the head is more often found as a symptom in children. It may be due to edema of the parts, and if furunculosis is ruled out it is almost a sure sign of mastoid disease of a progressive character. If fluctuation presents it means that a perforation of the cortex of the bone has occurred. This fistula naturally relieves pressure and in turn the pain and often the tenderness will be noticeably diminished. To say the least edema calls for close observation and often operation.

This brings us then to the value of the symptom that sagging of the superior posterior canal walls has. Many observers look upon this as a constant operative sign, and it undoubtedly is of great value. It is due to a localized periostitis from an infection of the anterior and superior mastoid cells. Here again a differential diagnosis must be made

from a furuncle in the externa lauditory canal. This should not confuse us as the swelling is harder and farther back frequently very near the drum membrane. This sign is due to infected cells adjacent to the area and is not always constant as the mastoid infection may be more or less confined to the tip cells. However, as a rule it is a reliable guide.

The appearance of the ear drum may not help in the diagnosis. Most frequently it shows signs of recent inflammation, but upon rare occasions it may be near normal in appearance. This latter condition, fortunately, rarely occurs as it makes the diagnosis more difficult. Usually there is a perforation with discharge. It so happens that a drum membrane must be incised several times in order to facilitate free drainage. This condition is looked upon by some otologists as indicating severe and progressive mastoid infection and some surgeons go so far as to state that the mastoid must be drained after the second or third free incision has been employed unsuccessfully.

It is not necessary to dwell at length upon impaired hearing as the cause is fully understood. Any acute infection of the middle ear to a certain extent influences the hearing. This symptom is in itself not diagnostic but is characteristic of every case of middle ear inflammation.

The leucocyte count may or may not add a link to the chain of diagnosis. We may find the white count increased in middle ear infection and not increased in mastoiditis. However, as a rule a moderate leucocyte count and especially, toward increasing means operation. As for example a high leucocyte count and an increase in the polymorphonuclears may make us more suspicious of a progress in the mastoid process.

The x-ray depends entirely upon the interpretations. I believe the otologist should work in conjunction with the radiologist. There should be intelligent cooperation and inspection of plates together, as the otologist is aware of the clinical symptoms and should not rely upon the x-ray as a deciding factor. Give it due consideration but do not rely upon it absolutely as a deciding factor influencing an operation. We must remember that a non-cellular mastoid occasionally gives the same appearance as one where the cell area is broken down and full of pus.

Now we come to the bacteriological examination of the discharge of pus from the external ear. This may be of help in indicating operation. Many otologists believe that a hemolytic streptococcus with mastoid symptoms indicate a sufficient cause for surgical intervention. Occasionally the streptococcus is the predominating organism. Be that as it

may the organism or strain cannot be entirely the deciding factor influencing us in operating. No one symptom is depended upon entirely to complete the chain of diagnostic links enabling us to arrive at a satisfactory conclusion as to whether procrastination may be in order or early operation indicated.

The temperature as a rule is not to be depended upon as a diagnostic symptom. It may be present at the beginning of the disease and it may be absent in the slowly progressive types. Persistent high temperature, 104°-105°, combined with a tender mastoid calls for early operation, providing other causes are eliminated. Long continued low temperature must be looked upon with apprehension and may also indicate operation. The intermittent or "pump handle" type characterized by a high temperature with relapses to normal, occasionally accompanied by chills or chilly sensations, often suggests complications of a serious character and calls for especial attention.

The pulse is of little use as a diagnostic sign and is usually commensurate with the fever. We may find a slow and thready pulse if intracranial complications ensue but we will not consider these complications here.

We thus see that acute mastoiditis is a condition presenting varying phases and that every case is a law unto itself, for not one of the main points of diagnosis that I have mentioned is a positive indication for operation which cannot be attributed to other causes. If such causes can be eliminated some of these symptoms become indications, e. g., continued and increased tenderness, swelling over the mastoid, protrusion of the auricle, pain, increased leucocyte count, etc. But it requires a combination of several of these symptoms to warrant us in operating. Therefore the judgment of the attendant otologist in each individual case must determine the issue. Since one symptom alone does not warrant an operation we might multiply various combinations of symptoms and still be rather undecided, for as Clay states there is a factor back of all our scientific deductions which is developed in each of us which we term "diagnostic intuition." It may be good or bad as we have developed, but it is one factor in diagnosis that every clinician unconsciously uses very freely.

This brings us then to the treatment of an acute mastoiditis clearly diagnosed by a combination of the above symptoms and which has definitely resolved itself into an operative procedure. Therefore, the ideal mastoid operation should have as requisites safety, thoroughness and a due regard for the question of rapidity. There are undoubtedly many methods of exenterating the mastoid cells. Wheth-

er we elect to use a motor driven burr a gouge or chisel matters little if a complete exenteration of all disease is accomplished, for this is the ultimate purpose. We must not stop as long as there is evidence of pathology. With the complete eradication of all disease accomplished we may choose to close the wound entirely and employ the blood clot method or one of its modifications. Personally, I close the wound by employing deep sutures of catgut and then bring the skin edges together with Michel clips leaving an opening below through which a wick of gauze is inserted to the antrum. On occasions I have employed the so-called blood clot method in which the wound is permitted to fill with blood and is then closed entirely. My success with this method has been gratifying, but in a few instances the wound has broken down and I have had to employ the method designated above. If our technique has been good and the eradication of disease has been complete but a short time should be necessary for a complete recovery, usually two to four weeks.

The after treatment of an operated mastoid might be considered but this is hardly necessary except to mention that here strict asepsis is employed, and to condemn syringing of the ear. This to me is a most pernicious habit which if followed may drive the infection into the inner ear.

As a rule the patient is discharged from the hospital on the fifth or sixth day and may come to the office for further treatment on alternate days until the wound closes.

DISCUSSIONS.

Samuel G. Dabney: Dr. Wolfe has chosen a subject that is always interesting and its discussion is always profitable. He has not confined himself, and I am very glad he has not, entirely to the title of his paper as announced, i. e., the diagnosis of acute mastoiditis. He has enumerated many of the predisposing causes and also said something about the treatment.

As to the predisposing conditions: Influenza and the various exanthematous diseases of childhood, scarlet fever, etc., are very frequently followed not only by otitis media but mastoid disease. The incidence of acute suppuration of the middle ear, and probably also mastoiditis, is greater following these infections than when not preceded by such diseases.

I think Dr. Wolfe might have mentioned in greater detail involvement of the upper part of the drum membrane,—I am not speaking now of sagging of the auditory canal,—but the so-called attic, the upper portion of the drum, which is far more likely to be accompanied by mastoid disease than involvement of the lower portion, for the reason that it is so much nearer to the entrance into the antrum. When an individual, child or adult, appears with severe inflammation

of the attic of the drum membrane, it is much more serious than when only the lower portion is involved. Dr. Barbour mentioned that he has seen several children whose ears were examined by otologists and the drum membrane pronounced normal, and yet rupture occurred within a few hours. In these cases it is quite probable the otologist did not obtain an adequate view of the drum. The trouble was probably in the attic. To obtain a good view of the drum membrane in a struggling, excited child is not always an easy matter, and especially is the condition of the upper portion of the drum overlooked.

In regard to the general symptomatology of acute mastoiditis and the importance of the various symptoms, the time of their occurrence and the duration of their persistence, to my mind, are the chief elements to be considered. Almost every severe, acute otitis media is accompanied by mastoid symptoms for the first four or five days or possibly a week, and while we may feel apprehensive we are hardly warranted in operating upon the mastoid during that time. However, there are two notable exceptions to this rule: (1) when there are cerebral symptoms the mastoid should be opened early, and (2) when there is decided edema which cannot be attributed to any condition in the auditory canal. In these two conditions early mastoid operation is warranted, but both are unusual. The great majority of patients with acute suppuration of the middle ear, with pain, tenderness, sleeplessness at night, get well without a mastoid operation, provided these symptoms do not persist. If they continue more than a week they mean a great deal more and operation is generally indicated.

Dench, a prominent authority on otological subjects, goes so far as to say that sagging of the upper, posterior wall of the auditory canal is pathognomonic of mastoid disease. I know he is mistaken, because I have twice opened the mastoid and found it normal although the patients had the most typical sagging of the upper, posterior wall. That symptom sometimes occurs with violent inflammation in the attic, the inflammation extending along the outer wall without involving the mastoid. It is, however, a very important symptom of mastoid disease.

I think we might divide mastoid symptoms into three groups. In the first group the symptoms are so apparent that the tyro might readily make the diagnosis, provided sufficient time has elapsed for the acute symptoms to subside. As illustrative of this group I might mention the case of a trained nurse who had a mastoid abscess on one side, and two or three years later on the other side, both were operated upon and she made an uneventful recovery. She had every symptom of mastoid disease, intense earache and pain which became localized over the mastoid process, tenderness persisting for ten days, fever,

sagging of the upper, posterior wall of the drum membrane, a profusely discharging ear,—typical manifestations of mastoid disease. A mastoid abscess was found at operation. This represents a plain, outstanding case of mastoid disease presenting many symptoms.

In the second group there are few symptoms. There may be slight persistent tenderness over the mastoid region, slight discharge from the ear, perhaps some evening rise in temperature, although often no fever in children and as a rule none in adults. I think fever in adults is exceptional, but sometimes it occurs and persists for ten days or two weeks. I believe operation is indicated in the majority of cases included in this group.

In the third group there are often almost no symptoms. As an illustration I will cite the case of a prominent tobacco merchant of Louisville. He felt well and insisted upon continuing his work. The symptoms were very meager, he had a slight discharge from the ear, a little tenderness on deep pressure at the exit of the emissary vein. I think Dr. Wolfe might have said something more in regard to the three points where tenderness is to be expected, viz., (1) over the mastoid antrum, (2) over the tip, and (3) about one and a half inches behind the auditory meatus which is the point of exit of the emissary vein. These are the three points where we look for tenderness. Of course there may be diffuse tenderness over the entire mastoid area, but this is exceptional. The gentleman I mentioned a moment ago had slight discharge, a little tenderness, but these symptoms were persistent. After three weeks the mastoid was opened and it was found that he had a subdural abscess. He had a large mastoid destruction. Such cases are difficult of diagnosis. There are only one or two slight symptoms which persist over a long period of time.

In regard to the pathogenic organisms in mastoiditis: Dr. Wolfe did not refer to the streptococcus mucosus capsularis. This organism produces violent mastoiditis with extremely slight clinical symptoms. Personally I believe I have seen one such case. A man admitted to hospital had a slight discharge from his ear. According to the history he had complained of "ear trouble" for two weeks previously and had been deaf in that ear since that time. Two days before I saw him he suddenly became unconscious. He evidently had meningitis, and I predicted that there had been a rupture through the roof of the tympanum or mastoid antrum. Necropsy showed a rupture to be present. He had very little evidence of mastoid disease but post mortem showed perforation through the tegmen antri. The following organism was not sought, but the clinical picture was typical of streptococcus mucosus infection. Of course we know that mastoiditis is more apt to follow streptococcal infec-

tion than the invasion of the pneumococcus or other types of organisms.

In regard to roentgen-ray examination: I believe Dench is right in saying that where there is severe, acute otitis media some involvement of the mastoid cells will be shown in the early stages by roentgen-ray examination. Personally, however, I attach very little importance to slight cloudiness of the cells, but I attach a great deal of importance to disintegration of the cell walls. I regard that as a very valuable sign. In some cases a single x-ray picture is so typical that we may immediately proceed with the operation, provided the clinical symptoms coincide with the picture. When there is doubt a series of roentgen-ray pictures should be taken. I believe that will be the future of the x-ray in mastoiditis, many pictures, showing the progress of the disease.

With reference to incision of the drum membrane, I do not believe we can always avoid mastoiditis by early incision of the drum, but I am entirely in accord with the statement made by Dr. Wolfe that very early incision should be made. I think the word paracentesis is unfortunate and should be discarded as it merely signifies puncture. The proper term for this procedure is myringotomy, that is a free incision of the membrana tympani. Personally I much prefer making the incision under a general anesthetic. I have never been able to perform this little operation satisfactorily under local anesthesia with any of the alcoholic mixtures advocated and used by other otologists. I think it is better to give the patient a few whiffs of nitrous oxide gas. This insures quietude and the incision can be quickly made. I would go a step further than most observers, and say when in doubt open the drum membrane. If there is any doubt about the drum membrane, I believe it is wiser to open it than not to do so. No harm is done by making a free incision in suspicious cases, even if it is not followed by the escape of pus.

As to edema: Dr. Wolfe might have dwelt more on that. I may refer to a case of this kind in a lady about fifty, the wife of a physician, whom I saw in consultation with him. When we decided to operate upon her she had developed quite extensive edema. I recall that we examined her carefully for tenderness the day of the operation and found little or none present. We were influenced largely by the edema which pushed the canal forward, the edema being greatest in the posterior canal wall, some over the mastoid area. She had extensive destruction of the mastoid cells with a large amount of pus. As a rule, however, marked tenderness is present. If I had to take my choice in selecting the most important symptoms of mastoid disease, I would place persistent tenderness first. Next I would place persistent discharge

in the category of valuable symptoms. Even then we may sometimes be mistaken. The third symptom I would select would be disintegration of the mastoid cells as shown by the roentgen-ray.

There is so much to be said on this subject that one hardly knows where to stop. I have had the pleasure of seeing several mastoid cases with Dr. Wolfe and his diagnosis has always been confirmed by operation. I believe family doctors, who usually see these patients first, are sometimes misled by the absence of fever. I have often heard them say that the patient could not have any trouble with the mastoid because there was no fever. That is perhaps one of the most misleading features, as mastoid patients frequently have normal temperatures. As stated by Dr. Wolfe, however, marked fluctuations in temperature must be regarded as important even if the patient complains of little pain. There is usually sufficient discomfort to make the patient restless at night. The opening from the middle ear into the mastoid sometimes becomes occluded with sudden cessation of the discharge and mastoiditis but such cases are rather exceptional.

James W. Bruce: The subject of mastoiditis is exceedingly interesting to everyone who does much work with children, because as Dr. Wolfe and Dr. Dabney have stated it is in children that we find the greatest number of cases of otitis media. There are several points in the paper of particular interest to me.

First is the question of early opening of the drum membrane. We know that in the vast majority of cases even when the drum is acutely inflamed, if we introduce carbolyzed glycerine into the ear and administer small doses of aspirin, the child will become comfortable and the ear will take care of itself in the course of forty-eight hours or three days without opening the drum membrane. On the other hand, it seems to me if there is any bulging and other symptoms, we are taking a decided chance in not opening the drum and allowing the pus to escape after that length of time has elapsed. I think some observers make a mistake in incising the drum membrane too soon, that is within the first twenty-four hours. Certainly my experience has been that rarely will the drum rupture in the first twenty-four hours, and frequently after that time the symptoms subside without operation. I feel somewhat more conservative about opening the drum membrane than I did several years ago, because I believe many of these patients recover without the operation certainly within the first three days. If the symptoms persist after that, then the drum should be opened in most cases.

Another point is the relationship between acute mastoiditis and acute intestinal intoxication. This point has been emphasized by Mar-

riott, of St. Louis, Missouri. He believes that a child taking the same kind of food and having the same care day after day and then suddenly develops high fever with intestinal intoxication, that this child has decided infection somewhere. On careful physical examination he found that he could usually locate a pharyngitis or otitis media. Occasionally, however, no infection could be found, and he finally determined to open the mastoid in these cases. He came to this conclusion by the finding of pus in the mastoid in a series of autopsy cases. So in these acute cases, where he finds no evidence of infection anywhere else, he has the mastoid opened, and reports a long series of cases with successful termination of the acute intestinal intoxication. In other words, that the digestive disturbance was secondary to infection of the mastoid.

Marriott's work, from a practical point of view, is difficult to follow because it would require a great deal of courage,—certainly I have not reached that point yet,—to recommend mastoidectomy on a child who presented no mastoid symptoms, and I think it would be rather difficult to get any reputable otologist to do so.

In regard to otitis media complicating acute infections, particularly pneumonia. Otitis media is a very common complication of all types of pneumonia, and I find it difficult sometimes to persuade the specialist to open the drum membrane of a child who has pneumonia. The otologist seems to think the ear will get well without opening the drum. Looking at the case as a whole, we cannot do much for a child with pneumonia, it has to take care of itself, and we can sometimes do a great deal of good by opening the drum. Therefore it seems to me the specialist should be a little more radical in these cases.

I enjoyed Dr. Wolfe's paper and thank him for presenting it.

Ben Carlos Frazier: The general practitioner and pediatrician encounter many cases of mastoiditis in children. Dr. Wolfe has helped me to solve quite a number of such cases particularly in institutions where I look after the children. He has often been able to clarify the diagnosis for me. I used to think I could tell without any question when a child had mastoiditis, but have seen three cases in which my judgment was wrong. In two of these Dr. Wolfe said it was not mastoiditis, and his opinion proved to be correct. In both these was some swelling, tenderness, and discharge from the ear. The children had been complaining of ear trouble for several days before I saw them, because the mother uses hot applications, irrigates the ears, etc., if there is any change. These were cases in which I was surprised that Dr. Wolfe did not operate. I see a great many cases of this kind in my institutional work.

Dr. Bruce spoke of the drum membrane not

rupturing during the first few hours. In many of the cases I see the drum ruptures before we know the child has earache. It is not unusual for me to see a suppurating ear with no history of earache. I have seen a large number of ear drums opened, and in my opinion no mistake was made in doing so. I think it is a wise procedure and may be done either with or without an anesthetic. I think most otologists prefer to have an anesthetic administered as it gives them greater time in doing the operation. I agree with Dr. Dabney that myringotomy, a free opening in the drum membrane, is better than paracentesis, merely a puncture of the drum.

J. Garland Sherrill Mastoid disease has always been an interesting topic to me, particularly acute mastoiditis engrafted on the chronic type. Sudden cessation of discharge from the ear in chronic mastoiditis is very important. This is exactly opposite to what occurs in acute processes.

One of the greatest factors in these cases is a well-taken history. Unfortunately the child cannot tell us just where he has pain; but when a child previously well becomes irritable, restless and does not sleep, it certainly behooves us to carefully examine the ears. Every opening of the drum membrane is preferred to delay. Early incision cannot be productive of great harm, whereas allowing the drum to perforate may produce considerable harm.

The cardinal symptoms we usually consider in these cases are: pain, tenderness, swelling, edema around the mastoid, and a discharging ear. Edema may occur far posterior in the canal and this might not mean a mastoid lesion, but such cases are rather uncommon.

There is a great difference in the type of organisms causing middle ear infections. Quite frequently patients are seen with middle ear disease and rupture of the drum membrane occurs, but the symptoms are so slight that little notice is taken of it.

Whenever the patient gives a history of discharging ear at a previous time followed by healing, and another attack occurs with discharge, pain behind the ear and tenderness, the drum membrane should be promptly incised. These symptoms are rather positive indications.

No mention has been made of pain in front of the ear in mastoiditis. Pain in front of the ear in chronic cases sometimes means chronic mastoiditis with an acute exacerbation. In such cases the anterior mastoid cells are markedly involved.

Another point is that in chronic ear disease there is eburnation of the bone, and the tendency in these cases is early involvement of the brain. For that reason a chronic case which becomes acute demands earlier surgical intervention than does a really acute case. An expert can very well perform myringotomy without an

anesthetic.

Philip F. Barbour: I am very much interested in the subject of mastoiditis and appreciate Dr. Wolfe's presentation of it. It is a very live question with pediatricists during the winter months.

The study of middle ear diseases with possible mastoiditis in children is attended by difficulties. Children are unable to locate the site of pain as accurately as adults. Many times we ask the mother if the child has put its hand to the ear, and she says no that its hand is placed over the head but not on the ear itself. Whenever a child places its hand on the head, even without any reference to the ear, I always think of the ear as a possible source of infection.

I think it is oftentimes quite difficult for even the otologist to obtain a good view of the drum membrane in the child. Dr. Dabney quoted me correctly in regard to rupture of the drum membrane in cases where the ear was pronounced normal. I recall one little girl in particular who had some symptoms of mastoiditis and I asked a prominent otologist to see her in consultation. After an examination he said there was nothing the matter with her ear or the membrana tympani. However, the drum membrane ruptured spontaneously two or three hours afterward. I have seen several similar cases. In some of them the nature of the trouble was not recognized for a day or two, in fact until rupture of the drum membrane occurred.

With reference to Dr. Marriott's operation (mastoidectomy) for acute summer diarrhea: I discussed this matter rather fully before you not long ago. Since that time I heard Dr. Marriott, at a meeting of the College of Physicians, in Cleveland, Ohio, during February, outline the same points. I have never been able to persuade myself to say to the mother that her child's ears should be operated upon simply because of acute diarrhea is present unless there are some definite symptoms that I can discover indicating disease of the ear. However, Dr. Marriott claims that many children with acute summer complaint will be saved by the early performance of mastoidectomy. If a child has toxic symptoms, marked dehydration and fever, and in addition localizing symptoms, such as tenderness, edema, and sagging of the upper posterior quadrant of the auditory canal, the diagnosis of mastoiditis is warranted and operation indicated. There is no dispute upon that point. I saw Dr. Arbuckle at the same meeting and asked him about Marriott's theory. He laid great stress upon the importance of the statement just made.

It is sometimes difficult to determine whether or not there is any sagging of the upper posterior quadrant of the auditory canal, and in certain cases there is marked anhydremia the cause of which we are unable to ascertain. In such cases I believe we should call an otologist

in consultation. I do not claim to be an expert in the diagnosis of ear diseases, and am not always able to diagnose mastoiditis on the basis of a discharge from the middle ear alone. However that is a very important sign in arriving at the diagnosis of mastoiditis when other symptoms Dr. Wolfe has mentioned are also present.

Claude T. Wolfe (in closing): Two or three of the points I intended to mention in closing the discussion have been fully covered by the previous speakers. Dr. Dabney spoke of general anesthesia for myringotomy. It is very seldom that I have to disagree with anything he says, and I have the highest regard for his opinion. He has helped me in so many instances that I certainly like to have him in consultation. Anesthesia of the drum membrane can be readily accomplished by local applications. For example, I anesthetized the drum membrane of a twelve year old boy today with local application of equal parts of carbolic acid, menthol and cocaine and successfully performed myringotomy. Carbolic acid with menthol as a vehicle seems to serve, to a certain extent, to dehydrate the inflamed tissues and relieve pain. I do not know what effect it would have on the drum membrane if used without cocaine. However, I know we do not get the proper anesthetic effect unless cocaine is added to the solution. The menthol keeps the carbolic acid in suspension. The boy just mentioned appeared with a bulging drum membrane which was decidedly inflamed. We have been told that a local anesthetic has no effect on inflamed mucous membrane. In this case I saturated a pledget of cotton with the anesthetic solution and with an applicator kept this in contact with the drum membrane for a few minutes. Fearing anesthesia might not be complete, a second application was made in a similar way. Myringotomy was then performed without the least pain or discomfort to the patient. In children of a year or less I do not believe any anesthetic is required. In children of that age I believe there is more danger in performing myringotomy with an anesthetic than without it. The child will cry and struggle just the same whether a local anesthetic is used or not.

As to examination of the drum membrane: I do not believe I am an exception to the rule, but I have very little difficulty in examining the drum membrane in children. If the child is difficult to control, I simply wrap a sheet around the upper part of the body and the head can be easily held by the nurse or the mother. Even if the canal is small I can obtain a clear view of the drum membrane by using the electric otoscope. This sometimes exaggerates the appearance of the drum membrane to such an extent as to at first to be misleading, but after the instrument has been used for some time one becomes ac-

customed to the exaggeration and can make an accurate estimate of the condition present. I do not see why the otologist should have any difficulty in examining the drum membrane in children. If an error is made it should be in opening the drum membrane rather than not doing so. There are certain well marked clinical signs that show any departure from the normal of the drum membrane, and I do not see why we should make the mistake of allowing the drum to rupture spontaneously. When the drum membrane is normal, there are equally characteristic signs. If there is evidence of inflammation, bulging, etc., with other symptoms, the picture is also characteristic. In my opinion there is very little chance of making a mistake between a normal and pathological drum membrane. In the presence of pathology a free incision of the drum should be made, not merely a puncture. The results justify the procedure and a free opening should always be made.

As to the occurrence of pain: I believe that not only in children but also in adults we are inclined to look upon pain as the primary symptom. I have seen many cases where pain was the deciding factor in recommending operative intervention. On the other hand, I have seen acute mastoiditis in children where the patient complained of no pain at any time. Some children never complain of anything, but they are the exceptions to the rule. Just as I tried to emphasize in the paper, there is no single symptom that we can depend upon as pathognomonic of mastoid infection, we must consider the symptoms in their entirety in arriving at a diagnosis.

Consequences of Excessive Leukocytosis.—Guieysse-Pellissier emphasizes that in acute or chronic inflammations death can frequently be ascribed to excessive leukocytosis. Dogs were exposed in inhalations of arsin. Necropsy revealed only a few histologic lesions in the lungs. Nevertheless the lungs were filled with pus. Arsin causes a rapid afflux of leukocytes; their number is too great for the space in which they are contained. They are unable to obtain sufficient nutriment and die. Staphylococci and streptococci sometimes provoke an afflux of leukocytes exceeding that required for the defense of the organism. A large number of leukocytes is usual in certain persons of lymphatic constitution. Attempts should be made to discover measures for the regulation of leukocytosis in infectious diseases, as well as for the prevention of hypertrophy of the lymphoid organs.

COMPENSATION PRACTICE.*

By S. B. SNYDER, Hazard.

Industrial and contract practice is a specialty within itself, especially when applied to mine practice and one of its demoralizing influences is the falling into loose habits or the rut: as you might say of diagnosis and treatment of diseases.

The habit is so prevalent of hailing the company doctor for everything, both real and imaginary, that the corresponding habit of handing out a few pills or tablets is soon formed. Ninety-nine out of every hundred strong working men, when seen by the company doctor that have headache, malaise, loss of appetite, etc., which a rather brisk cathartic promptly and properly relieves but the one may have beginning serious pathological conditions that deserve the most careful and painstaking examination.

Until 1916, all accidents were treated as medical cases, without extra compensation, unless by special arrangement in extraordinary conditions. In that year the Workman's Compensation Law went into effect. The main purpose of that law was to prevent industrial casualties and their dependents from becoming public charges. This compensation is an absolute gift to the injured workman or his dependents, for he has paid nothing for these benefits.

This law also provides free medical and hospital service for the injured, within the limits of \$200, for hospital and \$100 non-hospital service.

By far the most difficult and the most unsatisfactory feature of compensation practice is the adjustment of claims. Though not contemplated by the law, in practice the attending physician has become the referee in most of the contested cases of compensation. The plaintiff and defendant, the insuring company as well as the compensation board itself depends almost altogether on the testimony of the attending physician.

This is a very grave and important responsibility thrust upon the consulting physician. To hold the scales of justice absolutely even, with the injured or his family on one side, and the plethora insuring company, from whom the physician collects his fee, on the other, requires the most sterling honesty, the most unquestioned ability and the strongest courage of conviction.

The law sets out specific damage for specific injuries; thus loss of a finger or part of a finger, hand, arm, eye, toe or part of a toe, foot or leg is settled by a stated sum, but the great difficulty is in estimating the percent

of damage where no loss of parts occur thus a fracture with shortening, a joint slightly ankylased, an unsightly scar, but worst of all injury to the back without bony involvement, these require the wisdom of the serpent, the innocence of the dove, the courage of the lion to arrive at a just percentage of the damage. This is the class of cases that may deceive the very elect, the fertile field of the faker and malinger. A man may limp and affect pain a broken limb for a year though no displacement or shortening or other evidence of injury remain. A man may have pain or alleged pain in the muscles of the back as lumbago or rheumatism, for years and claim an injury that no x-ray nor discriminating diagnosis can confirm or disprove.

THE USE OF ISOTONIC SOLUTIONS FOR NASAL ADMINISTRATION.*

By J. E. RUSH, Lexington.

From time to time a small percentage of the students treated for nasal conditions, in the dispensary of the University of Kentucky, have stated that while the adrenalin or cocaine used for the primary shrinkage relieved them greatly, much irritation was experienced when the usual antiseptics were subsequently applied. Because of the fact that the dispensary is freely used by your large student body and that those with "colds" (with but very few exceptions) use the dispensary of the first appearance of symptoms, it was felt that this matter warranted investigation. Too, it was thought that its solution might be interesting to others who did not have such a large group to make observations upon.

We had been using argyrol following the cocaine administration but it was determined to substitute solargentum for it and later still the solargentum was replaced by silver nucleinate. The same observations were made, namely, that certain students experienced discomfort following administration of the silver salt.

It was thought that a decrease in the concentration of the antiseptics used might help toward a solution of the problem, but it was found that changing the concentration of the silver salts (whether argyrol, soladgentum or silver nucleinate) from 10% to 5% and later even to 2% did not eliminate the suggestions from some students as given above.

Just about this time the writer developed an acute rhinitis which later became chronic and was complicated by a sinusitis. The same treatment was used; namely, shrinking the tissues, followed by one of the antiseptics above named, with the result that the shrinking af-

*Read before the Perry County Medical Society.

*Department of Hygiene, University of Kentucky.

forded great relief but the administration of argyrol, solargentum or silver nucleinate, in addition to being quite irritating, seemed to cause a return of the original anatomical condition. The tissues seemed to become engorged and turgid following the administration of the silver salt and the discomfort came on so rapidly that it was thought that it must be due to the treatment. It was present irrespective of the silver salt used or its concentration (within the limits specified above.)

It occurred to the writer that the condition was, probably, due to the use of hypotonic solution which, following the shrinking due to the cocaine might, because of osmosis, produce the effect experienced. It was determined to substitute physiological saline solution for the distilled water, used in making up these preparations. The osmotic pressure exerted by the organic silver salts themselves was thought to be negligible and the physical effect of their addition to physiological saline was not taken into consideration. It was reasoned that if a hypertonic solution did result from their addition its administration probably would be therapeutically sound.

It was necessary to determine if there would be a precipitation of the silver organic salts on the addition of this quantity of sodium chloride. Testing all concentrations of the antiseptics used it was found that no precipitate resulted even though the solutions were kept for several days.

The subsequent use of isotonic solutions of argyrol, solargentum and silver nucleinate even in those whom we had come to know had rather sensitive nasal mucous membranes was very gratifying. Several chronic cases spontaneously remarked on the fact that these solutions were less irritating and in instances where applications of the isotonic and hypotonic solutions of equal concentrations of the same antiseptic were made to the two nostrils of a given individual, report that the hypotonic solution was distinctly more irritating occurred in every case.

Treatment of General Peritonitis Originating in the Appendix.—Reschke reviews the results of treatment of late cases of general peritonitis of appendicitic origin in the Grettswald university clinic since 1903. Of sixty-five patients brought in on the fourth day, or later, fifty were operated on, with a mortality of 92 per cent; fifteen were treated conservatively, with a mortality of 53 per cent. Of patients brought in on the third day, the mortality was more nearly equal, 48 and 50 per cent, respectively for those given surgical treatment and those given conservative treatment. In all cases, so far as could be judged, the process had extended over the entire abdominal cavity.

COLONIC MALIGNANCY: ANASTOMOSIS OF COLON TO SIGMOIDO-RECTAL JUNCTION: CASE REPORT.*

By E. S. ALLEN, M. D., Louisville.

The following case is of some interest, and will be reported briefly, as I am not on the program. The patient has kindly consented to come here tonight but could not do so later as he will be out of the city.

Mr. H., aged fifty years had, as he stated, "stomach trouble" for five or six months with rather persistent obstipation which culminated in complete obstruction.

Before I saw him he had been examined by Dr. R. Hayes Davis, roentgenograms had been made before and after a bismuth meal, and also after bismuth enema. The diagnosis of complete obstruction was made. Both before and after these examinations there was extensive abdominal distension.

An interesting feature is that there existed a communication between the urinary tract and the bowel, and the patient was passing gas and feces from his urinary bladder at the time I first saw him.

Details concerning the family history and previous personal history are omitted, and I will exhibit the roentgen-ray films to which reference has already been made. The picture taken after the bismuth meal and bismuth enema clearly shows the "completely" obstructed area.

When I first saw this patient he was very weak, cachectic, his abdomen was enormously distended, and he had lost about fifty pounds in weight.

Operation, December 16th, 1925, disclosed an indurated mass with thick walls and about four inches in length in the left side at the junction of the sigmoid and colon. The man was in a desperate condition and the surgical work had to be completed rapidly. Instead of doing a colostomy we made an anastomosis of the colon to the sigmoideo-rectal junction. A tube was passed into the colon through rectum and fixed with buried stitch while he was on the operating table and gas passed freely. A tremendous amount of fecal material was later discharged.

The patient made an uninterrupted recovery from the operation and has since gained forty pounds in weight.

DISCUSSIONS.

J. Garland Sherrill: Dr. Allen has shown us a remarkable piece of surgery. Not infrequently there suddenly develops complete stasis of the fecal flow due to malignancy, particularly in the region described, and malignancy in that

*Patient and roentgenograms exhibited before the Jefferson County Medical Society.

situation under certain conditions is especially difficult to handle. An effort to perform a complete radical operation is likely to result fatally. An effort to make a colostomy with the hope of subsequently relieving the patient by either closure of the opening or radical operation, requires the co-operation of the patient, and the patient often fails to co-operate with the surgeon. It was fortunate that the situation of the growth was such that Dr. Allen could make an anastomosis between the colon proximal to the obstruction and the sigmoid distal thereto. Granting that he only temporarily relieves the patient from the distension, discomfort and pain, he has certainly accomplished something worth while in the handling of this case. Even if condition develop precluding the hope of permanent cure, the patient is in better condition for radical colectomy than before Dr. Allen operated upon him. I think he is in better condition than if a colostomy had been performed, which entails constant soiling of the abdomen with feces, frequent change of dressings, etc. It sometimes happens in apparently inoperable malignancy of the stomach or intestine that after the simple sidetracking operation improvement of the patient is so marked that we are inclined to doubt the diagnosis.

The procedure adopted by Dr. Allen in this case is well worthy of consideration whenever conditions of this kind are met.

George L. Pope: The patient exhibited by Dr. Allen had been under the care of many physicians and surgeons in Louisville and elsewhere before he finally came under my observation. When I saw him his colon was distended to enormous size reaching to within three inches of the lower end of the rectum and was in a state of consolidation. It was impossible "to get anything in or out of him." However, after repeated use of the colon tube we succeeded in getting the intestine sufficiently clear to ascertain what or where the obstruction was. The patient was then referred to Dr. R. Hayes Davis who gave him bismuth by mouth and by enema and the site of obstruction definitely located. Dr. Allen was then called and operation was performed as he has told you. After the operation, and after relief of the pressure, gas and feces were expelled and the man began almost immediately to improve in various ways. His appetite soon became normal, he had regular fecal evacuations, and within three or four weeks he had gained twenty pounds in weight.

There is some question in my mind whether the growth obstructing the colon in this case is malignant. The patient has steadily improved since the operation. Dr. Allen deserves great credit for the excellent surgical work in this case.

Four weeks after the operation I had Dr. Davis to make final x-ray pictures, which

showed: colon returned to normal size, growth very much diminished in size, fistulas dried up, urine returned to normal, bladder symptoms disappeared.

E. S. Allen (in closing): I did not recite this man's previous history in detail, as stated in my report, because of the lack of time and not being on the program. The main point I wished to make was that where it is feasible and where there is sufficient bowel below the point of obstruction it is preferable to anastomose the colon to the lower sigmoidal or upper rectal segment than to perform colostomy which entails the disagreeable feature of constant soiling from the intestinal discharges, frequent change of dressings, etc.

I have had four cases of this type. In one recently observed there was not sufficient healthy bowel below the obstructing growth to permit anastomosis and colostomy became necessary. However, the patient appears to be doing just as well. The artificial opening functions perfectly, but there still remains the disagreeable features mentioned, constant soiling and change of dressings, which is avoided when anastomosis is made.

The patient exhibited tonight is a business man and goes to his office every day. I am sure he would not have been satisfied with colostomy. From a psychic standpoint at least it would have been very distressing to him. So far as he knows he is perfectly well.

As to the question of malignancy in this case: From the evidence afforded by palpation and the clinical symptoms we believe the neoplasm must be malignant, but I am not positive about this because we did not obtain a section. The marked improvement which has occurred would lead one to suspect the tumor was not malignant.

In one case of massive carcinoma of the rectum and sigmoid, so proved by section, colostomy was performed and radiation therapy later applied. That was two years ago and the patient is still living.

Pathologic Anatomy of Nephritis Induced with Uranium.—A series of rabbits were injected with uranium. They developed acute or chronic nephritis without edema. Another series were given a sodium salt during the injections. Nephritis with edema occurred. Examination of the kidneys showed lesions of the epithelium in Henle's loops, especially in the ascending branches. Newly formed connective tissue was found in the kidneys of animals exposed to prolonged uranium poisoning. Various anatomicopathologic forms of nephritis could thus be induced, comparable to a certain extent to those in man. The experiments also showed that renal lesion is a necessary factor, but not the only one in the development of edema.

WOMAN'S AUXILIARY NOTES

NOTES FROM FIFTH ANNUAL MEETING WOMAN'S AUXILIARY, AMERICAN MEDICAL ASSOCIATION

Beginning with registration at the Woman's Auxiliary booth at headquarters in the lobby of the Washington Auditorium, early Monday morning, May 16, the members and guests of the association enjoyed a merry and a busy stay in the Capitol City during the Fifth Annual Convention of the Woman's Auxiliary of the American Medical Association.

There were so many old friends to greet, so many interesting things to see and so many parties and functions to attend. No one mortal could hope to do it all.

Among the Kentucky members present were: Mrs. V. A. Stilley, Benton; Mrs. M. F. Davis, Mayslick; Mrs. C. E. Kidd, Paducah. Also Mrs. Irvin Abell, Mrs. I. A. Arnold, Mrs. M. C. Baker, Mrs. Albert Bass, Mrs. H. A. Davidson and Mrs. A. T. McCormack from Louisville.

Mrs. W. P. Steenkamp, who has been living in Louisville for the past four years attended the conference while en route to her home in Capetown, South Africa.

Kentucky was again honored in the election of national officers when Mrs. Irvin Abell was re-elected Treasurer. Following is the roster of officers for the ensuing year:

President—Mrs. John O. McReynolds, Texas.
President-elect—Mrs. Allen H. Bunce, Georgia.
1st Vice-Pres.—Mrs. Geo. H. Hoxie, Missouri.
2nd. Vice-Pres.—Mrs. Thos. A. Groover, Washington, D. C.

3rd. Vice-Pres.—Mrs. J. T. Christison, Minnesota.

4th. Vice-Pres.—Mrs. D. W. Parker, New Hampshire.

Secretary—Mrs. E. R. DePew, Texas.

Treasurer—Mrs. Irvin Abell, Kentucky.

Parliamentarian—Mrs. Willard Bartlett, Missouri.

Wreaths of remembrance were placed on the statues, busts and portraits of noted physicians in Washington parks and institutions by officers of the American Medical Association. In this memorial service the women were invited to participate. Kentuckians will be particularly interested to note that among others the list included:

Samuel Gross, Professor of Surgery, University of Louisville, 1840; Jefferson Medical College, Philadelphia, 1856-82; author of important surgical works. In the Mall, near the Army Medical Museum.

Crawford W. Long, physician in Georgia; first to use sulphuric ether in operations (1842). In

the rotunda of the capitol.

William Crawford Gorgas, Surgeon-general of the Army, 1914-18; Commissioner of the Panama Canal Zone and Chief Sanitary Officer during the construction of the Panama Canal. At the Army Medical Museum.

Walter Reed, 1851-1902. American Bacteriologist; discoverer of transmission of yellow fever by mosquito; Major, Medical Corps, United States Army. At the Army Medical Museum.

This was followed by a pilgrimage to Mt. Vernon where Dr. Wendell C. Phillips, president of the American Medical Association placed a wreath on the sarcophagus of General George Washington and Mrs. F. P. Gengenback, president of the Woman's Auxiliary to the American Medical Association placed a wreath on the sarcophagus of Martha Washington.

The paid up membership of the Woman's Auxiliary, American Medical Association was 6250, May 16, 1927. Kentucky claims 193 of this number. Texas and Pennsylvania have over 1000 members each. New Hampshire has 100 per cent county organization. How splendid it would be if Kentucky could claim 100 per cent organization! Let us all work for 100 per cent membership in our own State.

Words of praise from all sections were accorded the report of the year's work from Kentucky as presented by Mrs. V. A. Stilley. Special commendation was given the Woman's Auxiliary Number, Kentucky Medical Journal, which many of the women of other states asserted proves most helpful in furthering their own work of organization. Also, the timely emergency relief work of the Benton County Auxiliary for the Mississippi Valley flood sufferers and the State-wide project of collecting medical historical data were commended.

One of the unusual privileges of the members of the American Medical Association and their wives was the opportunity of inspecting the President's yacht, U. S. S. Mayflower and the Hospital Ship, U. S. S. Relief, at the Navy Yard Wharf.

The delightful harmony and close cooperation of the Woman's Auxiliary, District of Columbia Medical Society and the National Society, Daughters of the American Revolution was charmingly demonstrated in the brilliant program and reception given at Memorial Continental Hall, Wednesday evening, May 18. Many of the wives of physicians who have held office in the older organization of the Daughters of the American Revolution throughout the country, and many more who were born Daughters of the American Revolution but as yet have not filed application for membership, are now lending their aid in

furthering the growth of this newer organization, the Woman's Auxiliary to the American Medical Association.

MRS. A. T. McCORMACK, Delegate.

Responses from the Presidents of the County Auxiliaries indicate that interest in Hygeia is increasing.

Mrs. George T. Fuller, President of the Graves County Auxiliary, announces that she has appointed, as chairman for Hygeia circulation, the following:

Mrs. Stanley Mullins, Wingo, for the County of Graves.

Mrs. Frye, Superintendent Mayfield Hospital, for the City of Mayfield.

MEMBERSHIP

Have you mailed the return postal sent you with Mrs. Robert L. Woodard's letter dated April 15? If not, please answer the questions contained thereon and mail it today.

From these returns, the State Auxiliary will complete its mailing list and we want to include you as one of the women of the profession in Kentucky whether you are a member of the Auxiliary, or not.

Is there a copy of the current issue of Hygeia on **your** Doctor's desk?

BOOK REVIEW

HEALTH SUPERVISION AND MEDICAL INSPECTION OF SCHOOLS, by Thomas D. Wood, M. D., College Physician, Adviser in Health Education, and Professor of Physical Education, Teachers College, Columbia University, and Hugh G. Rowell, M. D., Physician to the Horace Mann Schools, Lecturer and Assistant Physician, Teachers College, Columbia University. Octavo of 637 pages, with 243 illustrations. Philadelphia and London: W. B. Saunders Company, 1927. Cloth, \$7.50 net.

This book is comprehensive and thoroughly practical. It is based on what the authors believe to be the eight fundamental aims of health supervision in schools. These fundamentals are:

1. To understand the school child thoroughly and to help him to realize the best health and development of which he is capable.

2. To protect the pupil against contracting disease from another child and to prevent his conveying disease to another.

3. To discover and to call to the parents' attention any existing defects, more especially those of a remediable nature, and to assist the parents in providing suitable treatment.

4. To enlist the co-operation of all existing agencies for the correction of defects of school children and of teachers.

5. To provide special optimum conditions for certain handicapped children and to furnish satisfactory supervision for them.

6. To provide suitable and healthful surroundings and conditions for the child in school.

7. To instruct the pupil how to lead a life of health and if defective, to instruct him how to overcome, as far as possible, the handicap of his infirmity.

8. To furnish technical information and guidance for all those who contribute in any way to school health service.

The carrying out of these eight aims implies a discussion of both physical and the mental health of pupils, together with all necessary procedures to determine whether or not the child is healthy. For the physician this means diagnosis; for the teacher it means "health diagnosis," and for the nurse it means an intermediate plane of duties—more advanced than that of the teacher but working with both physician and teacher in attaining the desired results.

Methods of examination are discussed. Various standards and responsibilities of schools and of school authorities in their relations to the health of pupils are presented. Emphasis is given to the performance of the procedures in the school and their relation to pupils, homes, health authorities and the community itself. Naturally, the health of the teachers is also included, especially the examination, supervision and health care of this important group.

A TEXT-BOOK OF MEDICINE. By 130 American Authors. Edited by Russell L. Cecil, M. D., Assistant Professor of Clinical Medicine, Cornell University, Medical School, New York. Octavo of 1500 pages, illustrated. Philadelphia and London: W. B. Saunders Company, 1927. Cloth, \$9.00 net.

This work gives practitioners and students the unusual benefits to be derived from a study of the experience of some 130 specialists.

Most of the contributors are teachers of medicine in medical schools, and, therefore, their presentations of the subjects which they discuss are, naturally, characterized by clearness, definiteness, and thoroughness, with particular stress on application.

The arrangement of the book, too, is extremely practical, giving emphasis to those diseases and conditions with which the general practitioner comes most frequently in contact.

A TEXTBOOK OF CLINICAL NEUROLOGY. By Israel S. Wechsler, M. D., Assistant Professor of Clinical Neurology, Columbia University, New York. Attending Neurologist, The Montefiore Hospital, New York. Octavo volume of 725 pages with 127 illustrations. Philadelphia and London: W. B. Saunders Company, 1927. Cloth, \$7.00.

This book is quite different from other works on neurology—different in approach and arrangement, different in the type of illustrations used. Instead of including the customary introductory chapters on anatomy and physiology, Dr. Wechsler has outlined, in a brief paragraph or two, the anatomic and pathologic facts on which the subsequent description of the clinical entity is based. Indeed, throughout the book, anatomy, physiology, pathology, and symptomatology are woven into one clinical texture.

Treatment receives full emphasis. Here is recorded the great store of clinical information gained by Dr. Wechsler at the bedside from a vast wealth of material. Indeed, the entire work is based on personal teaching and clinical experience, recognizing, of course, the experience of others.

THE DISEASE OF INFANTS AND CHILDREN by J. P. Crozer Griffith, M. D., Ph. D., Professor of Pediatrics in the Graduate School of Medicine of the University of Pennsylvania, and A. Graeme Mitchell, M. D., Professor of Pediatrics, College of Medicine, University of Cincinnati. Second Edition, Reset. Two octavo volumes totaling 1715 pages with 461 illustrations, including 20 plates in colors. Philadelphia and London: W. B. Saunders Company, 1927. Cloth, \$20.00 net.

Over 350 pages of new material have been added, the work being reset from beginning to end. The important new material includes: The breast milk dairy, vitamins, new material on breast and artificial feeding, acidophilus milk, hydrochloric acid milk, Pirquet method of feeding, protein therapy, heliotherapy, familial icterus of newborn, a new chapter on sudden arrests of respiration in the newborn, rat-bite fever, tularemia, epidemic encephalitis, acidosis and alkalosis, allergy, insulin and diet in diabetes, acrodynia, a new chapter on poisoning with the treatment of each, tuberculosis of tonsils and adenoids, much new material on tonsillitis and sinusitis, tests of renal function and of liver function, a table of blood in the anemias and the leukemias, goiter, thyroiditis, carotinemia.

THE SURGICAL CLINICS OF NORTH AMERICA (Issued serially, one number every other month.) Volume VI, Number III (Chicago Clinic Number—August 1926.) 324 pages with 101 illustration. Per clinic year (February 1926 to December 1926.) Paper, \$12.00; Cloth, \$16.00 net. Philadelphia and London: W. B. Saunders Company.

THE SURGICAL CLINICS OF NORTH AMERICA (Issued serially, one number every other month.) Volume VI, Number IV (Mayo Clinic Number—October 1926.) 274 pages with 91 illustrations. Per Clinic year (February 1926 to

December 1926.) Paper, \$12.00; Cloth, \$16.00 net. Philadelphia and London: W. B. Saunders Company.

THE CONQUEST OF DISEASE, by Thurman B. Rice, A. M., M. D., Assistant Professor of Sanitary Science, Indiana University School of Medicine.

The MacMillan Publishing Company, Publishers.

This book is dedicated to the late Dr. J. N. Hurty, State Health Officer of Indiana, who was so well beloved by many Kentuckians.

The purpose of this book is to set forth the most scientific information concerning the transmissible diseases to the end that these diseases may be controlled or perhaps ultimately eradicated and to make the subject interesting, if possible, to the general reader, and to such persons and students as may need to study the subject. It is my firm conviction that the complete conquest of the transmissible diseases waits as much upon the intelligent appreciation of the facts by the laity as it does upon the advances in research made by the medical profession, and to emphasize the great advances that have already been made through scientific methods by comparing the past with the present. Confidence in the methods and motives of science is a most important asset to the people of the modern world, and in no field is its value more clearly demonstrated than in the conquest of disease.

It is hoped that the following discussions are worthy of being regarded as real, honest-to-goodness science, accurate according to the latest knowledge on the subject, but without being hair-splitting with regard to points that are still in dispute; and at the same time interesting enough to make the reader wish to finish the entire book. The language used is meant to be entirely nontechnical.

THE SURGICAL CLINICS OF NORTH AMERICA (Issued serially, one number every other month.) Volume 7, Number 1 (Cancer Number—February 1927.) 235 pages with 153 illustrations. Per clinic year (February 1927 to December 1927). Paper, \$12.00; Cloth, \$16.00 net. Philadelphia and London: W. B. Saunders Company. This is the first of two numbers devoted entirely to cancer.

PRACTICAL DIETETICS FOR ADULTS AND CHILDREN IN DISEASE AND HEALTH. By Sanford Blum, A. B., M. S., M. D. Head of Department of Pediatrics, and Director of Research Laboratory, San Francisco Polyclinic and Post Graduate School.

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COUNTY SOCIETY REPORTS

Scott: The Scott County Medical Society has arranged the following program for the remainder of the year. The meetings will be held in the County Health Officers' office at 2 p. m. on the first Thursday in each month.

July, 1927—Dr. D. B. Knox, subject, "Abdominal Surgery." Discussed by Drs. Johnson and Anderson.

August, 1927—Dr. C. T. Lancaster, subject, "Chronic Constipation, Etiology, Prevention and Treatment." Discussed by Drs. Knox and Mason.

September, 1927—Dr. William Mason, subject, "Scarlet Fever, Sequela and Treatment." Discussed by Drs. Salin and Beard.

October, 1927—Dr. H. H. Roberts, subject, "Intoxication, Local Focal Points of Infection." Discussed by Drs. Allphin and Johnson.

November, 1927—Dr. William Salin, subject, "Diagnosis, Prophylaxis, and Treatment of Venereal Diseases." Discussed by Drs. Stewart and Johnson.

December, 1927—Dr. A. Stewart, subject, "Breast Feeding vs. Bottle Feeding." Discussed by Drs. H. H. Roberts and Johnson.

A. STEWART, Secretary.

Owen: The Owen County Medical Society reports they held a wonderful meeting on Thursday, May the 26th. We had with us Dr. W. E. Gardner, Councillor of this district, and he brought along with him Dr. S. C. McCoy, who delivered a very fine talk with some pictures on kidney and bladder. Also Dr. Edward Speidel gave a fine talk on "Obstetrical Emergencies." Dr. Virgil Simpson gave us a very instructive lecture on "Diabetis Mellitus." We also had Dr. Pirkey and Dr. Chas. Hibbit with us as visitors.

We are very grateful to Dr. W. E. Gardner and the visiting doctors for their good papers they brought to us.

K. S. McBee, Secretary.

Adair, Green and Taylor: Reversing the action of our friend, Mohammed, our joint county society induced the mountains to come to us in our meeting on June 9th, 1927. The doctors of the adjoining counties were invited, but only those of Marion county accepted the invitation. In all 25 of our physicians were present.

Essays were delivered by the following: Dr. W. Edgar Falls, Louisville, "Diagnosis of Acute Abdominal Maladies;" Dr. R. Julian Estill, Lexington, "Infant Feeding in Hot Weather;" Dr. R. Hayes Davis, Louisville, "Chronic Myocarditis." The clear and practical manner in which these subjects were handled by the various speakers would have done credit to not only a program of the State meeting but would have graced any session of the A. M. A.

W. B. ATKINSON, Secretary.



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Announcement

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KENTUCKY MEDICAL JOURNAL



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Ready—New Mayo Clinic Volume

This volume is rapidly selling out of print, although published only in June. It will not be reprinted—the Mayo Clinic volumes never are!

This year's volume contains many contributions that are particularly valuable to the general practitioner, as well as to the surgeon. For instance: Peptic ulcer, anacidity, hypo-acidity, malignancy, jaundice, biliary calculi, liver function tests, mercuriochrome, prostatectomy, colitis, lipiodol in gynecology, goiter work, diabetes and insulin (7 articles), blood diseases and blood tests, heart disease, Kahn precipitation test, Kolmer complement-fixation test, neurosyphilis, malarial therapy, bone surgery, eye, ear, nose and throat work, bronchoscopy, surgery of the chest, brain and cord surgery, the cancer problem, radiotherapy, roentgenotherapy, estimation of urea in blood, technic of blood-cell count, Mayo operation for cystocele, plastic surgery, carbon monoxide and cancer, oral sepsis and focal infection, periodic health examinations, etc., etc.

By WILLIAM J. MAYO, M. D., CHARLES H. MAYO, M. D., and their ASSOCIATES at the Mayo Clinic, Rochester, Minn., and the Mayo Foundation, University of Minnesota. Octavo of 1329 pages, with 386 illustrations. Cloth \$13.00 net

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KENTUCKY MEDICAL JOURNAL

BEING THE JOURNAL OF THE KENTUCKY STATE MEDICAL ASSOCIATION

Published Under the Auspices of the Council

VOL. XXV.

BOWLING GREEN, KY., AUGUST 1927

No. 8

EDITORIAL

ATTENTION: FORMER ILLINOIS DOCTORS.

Doctors who lived formerly in Illinois, or who are descendants of pioneer physicians of the "Illinois country" will hear with interest that Volume One of the "History of Medical Practice in the State of Illinois" is ready for delivery.

The History has been written under the supervision of a committee appointed by the Illinois State Medical Society as a commemoration of its seventy-fifth anniversary but more especially to make a living tribute to those valiant men of the medical profession who played so able a part in the exploration, settlement and development of the Illinois country.

In this first volume of the History are set down events from the earliest available knowledge of conditions in the Illinois country, along through the days of the Aborigines, and commencing with the actual records when, in 1673 Father Marquette had medical attention in Chicago, up until the year 1850.

In the second volume (now in preparation), narration continues up until the present time. Future years will bring other volumes so that this History will be an ever virile monument to the men and incidents whom it would honor.

Research of years resulted in an opulent supply of material from which to compile this History and has evidenced to an almost unbelievable degree the vital part played by physicians in every angle of the exploration, settlement and development of a country that is one of the richest and most influential sections of the richest country in the world.

It must be remembered that originally the Illinois country encompassed a territory far greater than the area now known as the state of Illinois, Wisconsin, Indiana, Missouri, Kentucky and Iowa, as well as what is now Illinois and even some sections of Ohio fell into that primitive epitome of the Illinois country. In the southern part of the state it was well into the Nineteenth Century before Missouri and Illinois ever acknowledged the natural divorce of interests made by the Mississippi river. Because of this, naturally enough, close interest in this history extends to

physicians or to their descendants in practically every state in the Mississippi Valley or contiguous thereto.

Rare maps, unusual personal memorabilia and rare discretion in compilation, make this History of unique interest to doctors everywhere and to many laymen.

This History of medical practice in the state of Illinois, embodies in the course of its narration, an interesting and illustrated digest of the early efforts of white settlers in Illinois, with specific allusion to the share in these tasks, performed by medical men. Included are portraits of rare interest, reproductions of historic documents, excerpts from dairies, personal letters, human reminiscences of days fraught with peril, filled with hope, and not devoid of humor, through a period of about 250 years. From the days of the "Chirurgeon" who attended Pere Marquette, through the massacres at Fort Dearborn, the years of Indian raids, down with the circuit-riding "saddle-bag" doctors, to these days of radium and radio, this History marches. Attics, family albums, safe deposit vaults, and state records have been ransacked to produce the material needed for this chronicle. Illinois holds today the honor of being the world's medical center. Progressive steps of this achievement, and its contributive factors such as hospitals, asylums, sanitariums and allied institutions and medical colleges are set forth in detail, both pictorial, documentary and narrative. In brief, this account epitomizes the almost unequalled growth of a community whose economic wealth is paralleled by its public health. Personal data of the men, of the organizations,—including pioneer army and navy physicians and surgeons and local, county and district societies, schools and hospitals as well as of the Illinois State Medical Society itself; various internationally famous medical discoveries made by Illinois men; the state's contribution to the world of research; medical libraries and periodicals existent in Illinois; campaigns for medical protection against enemies of public health; details of the various Medical Practice Acts; state sanitation from the notable drainage canal and the supervision of food supplies, vital statistics; meetings, officers, policies and finances of the State Society;—all this and more in accurate transcription make this history a miniature en-

cyclopedia of scientific advance and desirable and hitherto unavailable information.

The edition is limited. It will not be reprinted. A place in every physician's library is merited by this volume, both as a tribute to the men who blazed the trail for modern scientific medicine and as an ever-present reminder and authority as to what is happening to medicine right in this state every day, so far as finance, discovery, legislation and public relations are concerned, and the men who are responsible for the heritage of trust for over two centuries and a half. Volume One is now ready. Volume Two will follow soon. Orders may be sent to Committee on Medical History, Illinois State Medical Society, Medical & Dental Arts Building, 185 North Wabash Avenue, Chicago, Illinois,—Charles J. Whalen, M. D., Chairman.

THE NEW AMERICAN MEDICAL DIRECTORY

For more than twenty years the American Medical Association has been publishing a directory of the medical profession. Ten editions have appeared the last one (1927) being just off the press.

The first edition (1906) contained 128,171 names of physicians in the United States, its dependencies and Canada. The new Tenth Edition includes 164,002 names. There is an increase of 2,644 over the previous edition. If the Directory were merely a list of names and addresses of physicians it would not have great significance. That information is valuable, but of far greater value is the fact that the Directory gives proof of the right of each physician listed to practice medicine—namely, time and place of graduation and year of license. In addition, society membership, specialty and office hours are included. Capital letters indicate those who are members of their county medical society, and a special symbol follows the names of those who are Fellows of the American Medical Association.

The information concerning hospitals and sanitariums of the United States is another valuable and extensive feature. Descriptive data appears following the names of 7,816 hospitals and sanitariums such as type of patients handled, capacity, and name of superintendent or director.

The list of physicians in each state is preceded by a digest of the laws governing medical practice in that state; members of licensing board; state board of health; names of city, county and district health officers; officers of constituent state associations and component county and district medical societies.

The book, in short, is one vast source of reliable data concerning the personnel of the medical profession and the institutions and activities closely related to it. It contains 2,575 pages and is sold for \$15.00. Published by the American Medical Association, 535 North Dearborn Street, Chicago.

FOR THE GOLFERS.

Dr. O. W. Rash, Owensboro, has been appointed Chairman of the Golf Tournament of the Kentucky State Medical Association, which will be held at the Owensboro Country Club, October 1-6 inclusive.

All the tournaments and handicaps will be in charge of the Golf Committee of the Owensboro Country Club, and all golfers who wish to enter these tournaments are requested to send their attested handicaps before September 15th.

Women physicians, doctors' wives and daughters are requested to enter these tournaments as they have secured a number of handsome prizes for the ladies.

Dr. G. S. Hanes and Dr. Phillip F. Barbour of Louisville, have donated prizes and the merchants at Owensboro, have contributed liberally to these tournaments, that regardless of whatever flight you enter there will be a prize for almost every player.

A NEW MEDICAL DICTIONARY

Our friends, the W. B. Saunders Company of Philadelphia, have just brought out the Fourteenth Edition of the American Illustrated Medical Dictionary by Dr. W. A. Newman Dorland. Doctor Dorland is a member of the Committee of Nomenclature and Classification of Diseases of the American Medical Association. This volume contains 1388 pages and 319 illustrations, of which 107 are in colors. With flexible binding it costs \$7.00 or with a Thumb Index \$7.50.

It is brought up to date and contains every word that you will find in the most recent medical literature. This is unquestionably the most practical medical dictionary for the practitioner of medicine and the JOURNAL takes great pleasure in commending it to its readers.

ORIGINAL ARTICLES

APPLIED THERAPEUTICS OF HEPATIC EXTRACT IN MEDICINE AND SURGERY.*

By R. ALEXANDER BATE, Louisville.

The term "applied therapeutics" is intended here to embrace the application of normal endocrine secretions of known physiologic action, extraneously obtained, and used in the therapeutics of disorders pathologically understood.

"The living organism" is conceded "adequate in itself, to the cure of all its curable disorders." This power, as related to the functions of the liver, is the subject of our present discussion.

The pharmacodynamic action of hepatic extract is the physiologic action of the liver autacoids, either normally or artificially exhibited, in combating diseases of the living organism.

Whether of bacterial or metabolic origin, all toxins produce an impaired or perverted cell action" known as disease.

Disease, if curable, is cured by the pharmacodynamic action of physiologic principles, autacoids—either hormones, that by electrochemical changes excite cellular activity, or chalone, that by similar changes arrest or check cellular activity.

Upon the knowledge of the cellular changes in disease, and upon the knowledge of the cellular activity excited by the autacoids of the economy, depends the science of medicine.

"Guesses" soon fall to the ground and "gaps" are being closed by our wonderful biologic-chemists.

The clinician's observations are essentially inexact, since such judgment is the basis of opinion drawn from constantly changing living organisms.

The physiologist may demonstrate at will his physico-chemical findings and these findings form the basis of all medication. Hence you are asked to listen to clinical interpretations in the light of modern physiology and pathology.

Proteids, such as egg white, in an acid medium containing both terminals of an electric circuit, flow in molecules toward the positive pole; in an alkaline medium the molecular flow is towards the negative pole.

Autacoids are nucleo-proteid substances, dialytic, stable with water in the presence of heat and probably electrolytic. Electrical

currents of action are set up in endocrine glands when excited to active physiologic function.

Autacoids are carried through the circulating fluids to the various sequestrators or ductless glands probably electro-chemically complementary in relation to the formation of autacid balance.

The stimulus or hormone is carried through circulating fluids like blood plasma and excites a physiologic function through electrochemical activity which is never neutral.

Autacoids control metabolism, and through psychic influence co-ordinate with the nervous system.

Just as the dual action of the egg white is observed in the varied media, so it is personally believed the dual action of all chemical messengers or autacoids may be explained.

The hormone, or stimulant, may become a chalone, or check, according to the reaction or chemical situation in which the autacid finds itself.

Thus it is found each succeeding dose of pituitrin has less effect than the preceding one if given at short intervals or before the reaction of the sequestrator is in statu quo.

The dual action of the suprarenal autacoids is thus illustrated, they cause the pouring out of glycogen from the livers of overfed dogs; and the same suprarenal messengers cause glycogen to be stored in the livers of starved dogs. "A circumstance," says Macleod, "difficult of interpretation."

Again, adrenal autacoids contract the pregnant feline uterus and relax the empty one.

The chemical differences in the two states of the sequestrators or acquisitive livers and wombs, probably resulted in a different electrochemical reaction with an altered pharmacodynamic effect.

Electrolytes, which largely control the specific attraction of autacoids, are distributed by the diffusion pressure of their molecules and ions as well as by the attraction force of oppositely charged ions.

Therefore autacid equilibrium may be seen to depend upon the sources governing the reaction of the blood plasma together with the electrical potential of their molecules. Hence the clinician must bear in mind the state of his subject will determine the reaction to his autacid therapy, which may be neutral, negative or positive.

Hooper and Whipple observed that dogs in whom the bile was permanently diverted from the intestine would soon die on an ordinary diet. Feeding with bile did not prevent death, but feeding with liver, even cooked liver, kept the dogs alive.

Autacoids are not affected by heat in the

*Read before the Jefferson County Medical Society.

presence of water, but are neutralized or used up in the performance of their function.

Thus it was made plain the liver secreted autacoids essential to life. Furthermore, if feeding back to the system the bile generated and diverted from the system does not preserve life, yet cooked livers will, we must conclude bile exhibition has neutralized the chemical hormones that would have stimulated additional hepatic autacoids (besides allowing bile may be toxic).

In any event the element essential to life is hepatic, and of hormone type.

Hepatic autacoids surmised from constructive syntheses, as early as 1908, are now generally conceded.

A convenient terminology of the liver functions of hormone reaction are "gluconeogenesis, ureogenesis, bileogenesis, lipoideogenesis and coagulogenesis."

It will be remembered the liver is composed of both hypoblastic and mesoblastic elements. The liver secretes endogenous and exogenous physiologically active principles.

Just as it has been proven that the testicular interstitial and glandular structures each supply hormones for internal and external usage.

Therefore from whole gland preparations of the liver we would anticipate not the action of a single hormone, but a homo-stimulative effect upon each liver function. It must also be stated that the livers of animals, other than man, anthropoid apes and Dalmatian dogs, have the power of converting uric acid and its congeners into allantoin and other harmless products. From such livers hepatic extract is derived.

Parke Davis & Co. supplied a hypodermic solution of hepatic extract each c.c. of which was equivalent to nine grains of liver substance.

Improved preparations are now on the market and in quite general use both orally and hypodermatically.

Just as insulin has been separated from the pancreatic derivatives so in time will each hepatic hormone be separated and utilized. Until that time oral administration for continuous use is to be preferred; since it has been proven its oral use saves life and probably renders toxins of bile inert.

The applied therapeutics of the hepatic hormone originating the glycogenic liver function is as briefly expressed here as comprehensibility permits.

Sugar, supplied the liver from the alimentary canal, which has resulted from the action of the "exogenous" pancreatic secretions upon the starchy food, is dehydrated of one water molecule and stored in the liver as glycogen. In diabetes the function of storing or

glyco-genizing sugar has been lost. Hence the rational indication for the administration of the hormone that excites this function.

It has been stated that in overfed dogs suprarenal hormones pour out the glycogen and in starved dogs they cause it to be stored. Hence the use of the restricted diet and the adjuvant hormone of adrenal origin.

The great anti-diabetic hormone, insulin, or the endogenous Island of Langerhan secretion, likewise lessens the outpouring of glycogen; and acts specifically.

It has now been demonstrated that the use of hepatic extract greatly increases the pancreatic secretions—exogenous and endogenous. Hence the insulin effect of the liver extract on diabetics.

I have used the dry extract of liver orally since 1908; the hypodermatic solution for the past four years. Sugar has disappeared permanently from some cases. And has returned in other diabetics. Some of these cases have undergone surgical operations successfully. One case of gangrene of the toe recovered, and another case of gangrene in the seventies, died. Both patients also had additional insulin treatment. All the cases referred to here have been previously reported and discussed at the Louisville Society of Medicine, and will not be mentioned in detail here.

The pharmacodynamic effect in glycosuria may be characterized as homostimulative, isophysiologic or substitutive and a stimulant of correlated hormones.

In the glycosuria of pregnancy the results from hepatic extracts have been quite satisfactory.

Macleod states it is provable that sugar also may be derived from protein substances. Hence the hepatic association of carbohydrate and nitrogen metabolites shows the inter-relation and polypharmacy of nature or physiology.

The urea-forming function of the liver is perhaps the one most frequently disorganized by faulty diet and hygiene; and the one that most frequently requires the attention of the internist, and the precaution of the surgeon, because of the cardiac, renal, and blood changes that endanger or prevent surgery and hasten death.

Here the protein intake is modified by the parathyroid autacoids to amino compounds or building stones; after reaching the stage of ammonium carbonate (which is the next metabolite) the protein molecule becomes dehydrated of one water molecule, to form urea in the liver.

Just as hormone caused the dehydration of the carbohydrate molecule to glycogen, so a hormone causes the dehydration of the protein molecule to urea.

Serum albumin of the blood is believed to be formed in the liver, and either has its own hormone or is obtained in the metabolism of proteids in this connection.

Minced liver (with blood) incubated in the presence of carbon dioxide forms uric acid.

Uric acid disappears when minced liver of animals is incubated in the presence of oxygen.

Uric acid in man is an end-product, i. e., undergoes no further changes. In other animals except the anthropoid ape and Dalmatian dog, uric acid is altered to allantoin, a harmless product, found in the allantoic fluid and fetal urine, of the human race.

In reptilians and birds, uric acid takes the place of urea. Oxidation and hydration constitute the chief metabolic differences between these vertebrates. (This, I presume, explains why some men are called birds.)

The nitrogen egesta, or waste, in health equals the nitrogen ingesta. The protein ingested is converted into amino-nitrogen to be eliminated by the liver as urea, uric acid, creatinin and their congeners.

Bouchard many years ago showed the comparative non-toxicity of urea.

Alexander Haig showed the tremendous toxicity of uric acid and its protean manifestations.

From uric acid, oxalic acid and guanidine are obtained. Both are highly toxic and have pathological syndromes all their own.

Macloud says for each of the amino compounds there is a deaminizing enzyme. These vary in different tissues and in different animals. The pig contains no guanase or enzyme that deaminizes guanine or guanidine which abounds in hog-meat. Man has no uricase or enzyme for uric acid.

Guanidine in man is obtained from the creatinine which is classed as an endogenous metabolite in contradistinction to urea, an exogenous metabolite. The experimental physiologist here bears in mind that animals possess uricase or an enzyme converting uric acid from the toxins found in the human.

The parathyroid autacoids are conceded to control calcium metabolism. This function perhaps combines with the hepatic autacoids to neutralize the amino compounds, to furnish electrolytic calcium and to avert sudden death by the frequent formation of insoluble calcium compounds, recognized pathologically as calcification of blood vessels, in calculi, etc.

The calcium ions have been proven essential to the conversion of the liver hormone, prothrombin into thrombin, which causes proper clotting of blood.

Again "union of calcium," says Macloud, "with the contractile substance of the heart

will lead to a systole or contraction, whereas union of sodium or potassium with the heart substance, will lead to relaxation or diastole."

Here we almost see the electrical response, or ionization, as the very source of life itself; some have actually called this power the soul; certainly elongation and contraction of muscle fibre has much light shed upon it, and may elucidate the dilatation of blood vessels in organs about to function.

Nevertheless the liver is the great detoxicator of the purin bases, and its ureogenetic hormones are indicated in the treatment of arteriosclerosis, high blood pressure, albuminuria, asthma, allergy, urticaria, angioneurotic oedema etc.—all those diseases characterized by a disturbed elimination of nitrogen; and the secondary cardiopathies and renalopathies.

As a prophylactic against disturbed nitrogen balance the action may be regarded as specific.

The ureogenetic hormone of animal livers when administered to man is believed to develop uricase which converts the uric acid into a harmless substance, likewise it converts oxalic acid and guanidine into non-irritating exogenous or waste products.

Early in 1926 from the Canadian Laboratory, already so famous, came the statement that blood pressure was greatly relieved by a depressor liver hormone. By other observers it was found that methyl guanidine (as obtained from creatinine and hog meat) injected into the system caused high blood pressure and certain reactions to electrical peripheral stimulation.

These electrical phenomena are believed peculiarly limited to the effect of this metabolite.

The use of the liver autacoids both experimentally and clinically has been followed by the slow but steady fall of blood pressure, that would attend the elimination or conversion of the toxic metabolite.

Major (Journal A. M. A. 7-23-26) says "When we inject liver extract slowly into an animal, whose blood pressure has been elevated by methyl guanidine, the blood pressure slowly falls to normal, but does not reach the subnormal level unless very large doses are employed."

"A normal animal will withstand large doses of liver extract without any fall in blood pressure—often from fifteen to twenty times the dose necessary to lower an elevation in blood pressure by guanidine."

This seems ample proof, that the cause of the high blood pressure—guanidine—is removed by a guanidase, an enzyme caused to be developed by the hepatic autacoids. This test likewise demonstrates the negative phase of the hormone in a "neutral" medium, i. e.,

where blood pressure is normal no activity is evinced by twenty times the dose required in pathologic pressure, or as a therapeutic measure.

A standardization of liver extract, intended for the purpose of lowering blood pressure, is likewise based upon this test; showing the depressor power of the extract over a given pressor effect of the methyl-guanidine.

I have reported two cases of convulsions with high blood pressure, one with renal lesions, the other without—both of whom recovered, following the exhibition of hepatic extract. Both had previously had hemiplegia on the left side.

In oxaluria I have reported a number of cases in whom the oxalates disappeared in such a manner as to indicate liver autacoids are specific in their results. In every case the oxalates ceased to appear after hypodermatic use of liver extract. Creatinine, or methyl guanidine appears at each menstrual cycle in the female; it occurs in pregnancy and during post partum involution of the uterus. (Mac-loud).

It is also observed where Cæsarean section with removal of the uterus is performed (Mac-loud) hence it is of ovarian, probably corpus lutean, origin. Its treatment is hepatic extract containing specific ureogenetic autacoids.

Tinnitus aurium and muscæ volitantes have been unpleasant symptoms that have disappeared, together with habitual drowsiness and other manifestations of retrograde metamorphosis, after the liver autacoids were used.

Coagulogenesis or the power of preventing and producing clotting of the blood is now believed due to autacoids formed in the liver.

Pro-antithrombin, antithrombin, thrombin, fibrinogen and the calcium electrolyte, with its essential ions, are the autacoids which control the functions of forming and preventing blood clot.

It has also been observed that just as the suprarenal and other autacoids entered into the *modus operandi* of the previously mentioned metabolic functions of the liver, so here, too, it is believed the suprarenal autacoids may be shown to vary from just a slight effect in preventing clotting, up to a point of producing haemophilia or an effect where clotting will not occur. The autacoids of the thymus have been proven to influence clotting of blood in the same dual way as has been shown in previously mentioned pituitary and suprarenal instances of action.

I have used the hepatic extract in one case of haemophilia in a female, whose mother likewise had the disease.

A previous tooth pulling was attended with hemorrhage for some days. Some months

after the exhibition of hepatic extract, no hemorrhage followed tooth extraction.

It is to be expected the time of blood clotting, which is of surgical significance, may be more or less controllable by these autacoids. Further reports on clotting time effects will be made. The children of this woman have had improvement in health following fractional thyroid exhibition.

Lipoideogenesis, like glyeogenesis and ureogenesis, is attended by a configuration in the molecule of reserve, from that of the molecule of action.

The "mobilization of fat from the intestines and fat stores to the liver" as described by Leathy is now seen to be for the purpose of "desaturation" or molecular alteration and later "phosphorization" and use.

An "inter-relation" exists between all the endogenous functions of the liver. Rosenthal observed that the fat and glycogen functions are reciprocal—"When glycogen is present there is little or no fat, and vice versa." Recently it has been shown when guanidine is present i. e., diminished ureogenesis, blood sugar is below normal.

That an equally apparent relation exists in the other catabolic processes may likewise be observed. Polypharmacy is not scorned by nature; rather she makes a "perfect blend."

In the breaking up of the fatty acids a tremendous proportion of carbon-dioxide is formed. This in turn brings back the uric acid formation and furnishes the inter-relationship between the ureogenetic and lipoides-genetic functions.

Dakin and Wakenman observed autacoid action in certain "ferments" (?) of the liver—"one reduces aceto-acetic acid to hydroxybutiric acid, the other reverses this action."

The lipoids found in the livers are glycerols, waxes like cholesterol, phospholipoids, like lecithin; glyco-lipoids, sulpho-lipoids, fatty acids and stearates.

"By oxidation the liver first desaturates the 'higher acids' (such as stearic, palmitic, etc) then aceto-acetic is formed which finally reduces to CO_2 and water. So that again the possibility occurs of uric acid formation in the liver in the presence of carbon dioxide, or faulty oxidation.

This explains the autacoid action of the liver in lipoideogenesis, and the same rational therapeutics applies as in the preceding consideration.

The syndrome arising from disturbed lipoideogenesis embraces gallstones, acidosis and the great chain of uric acid disorders or in this case carbon-dioxide pathogenesis as well as unknown influence upon fat distribution. Asthma and gout represent composite ends of the uric acid chain of diseases! Gout

is clearly from the protein intake, while asthma may be due to the uric acid formed in disturbed lipoideogenesis. Cholelithiasis and obesity in the same subject occur most frequently.

It has been proven that the presence of fats in the duodenum cause gall bladder contractions and expulsions of bile.

The thyroid probably furnishes the autacoids adjuvant in their action to hepatic lipoideogenesis. The arterio, pituitary autacoids, likewise enter into this complex of fat metabolism.

Metabolic skin disorders yield to the combined treatment by hepatic extract and thyroid substance.

It may be seen that treatment, by means of hepatic autacoids, of fat and protein pathogenesis is likewise prophylactic treatment of such results as gall stones, arteriosclerosis, renal and other visceral morbid changes.

The very close relationship of the hepatic functions is emphasized as we observe so many of the permanent morbid changes resulting from overlapping metabolic activities, e. g., the liver's complementary glycogen and fat content; its fat metabolism into CO_2 which forms uric acid in the liver and its blood and bile interchanges.

Bileogenesis is both an endogenous and exogenous function. Hence its syndrome will be of two types according as the internal or external functions are impaired.

That bile is essential to life was shown when the animals were found to die when the bile was diverted from the system, although the liver remained.

That the vital quality is a liver secreted hormone was shown when liver substance prevented death of the animal.

The fat transformation in the liver requires the previous biliary emulsification that takes place in the intestines and is purely chemical. The bile salts are autacoids formed exclusively in the liver.

There seems to be a blending of the coagulogenetic and lipoideogenetic functions to produce the bileogenetic function.

The chief constituents of the bile are derived from the blood and many combine with the fatty acids. "Some think cholesterol of the blood", says Macloud, "is excreted in two ways—as cholesterol and as choleic acid."

Again the presence of bile in the blood of the jaundiced appears to delay greatly the time of clotting of the blood.

I remember a jaundiced patient of the late Dr. T. H. Baker, who became jaundiced at each menstrual period. She was operated on for gall stones and died because of secondary hemorrhage three days after the operation. The hepatic autacoids controlling the func-

tions of blood clotting and fat forming would have constituted rational therapeutics in this case.

It is not the purpose of an abbreviated paper of this kind to discuss the physiology of the hepatic functions.

It is desired to indicate the rational basis upon which hepatic autacoids may be used in alterations, either of quality or quantity, of hepatic secretions, that result in pathological conditions, or cellular action.

The use of hepatic extract is found to stimulate the biliary functions of the liver both as to quality and quantity.

Hence hepatic autacoids are indicated in those cases of functional "torpidity" so marked in the sedentary and middle aged.

The extract is indicated in the qualitative disturbances following infection, mineral poisons, toxins in general and the changes found in cholelithiasis and anaemias.

Hepatic extract is contraindicated in all cases of obstructive jaundice or where the biliary outflow is impeded in cancer, etc.

One case of cancer of the liver was attended with greatly increased pains after exhibition of an ampule of hepatic extract. In another case of gall stone disease, in which it had been administered, an operation disclosed no gall stones, but many consequent adhesions and a greatly distended or "dropsical" gall bladder.

Bouchard showed the blood coming from the liver was fifty times less toxic than the blood going to the liver. This auto protective power of the liver has, likewise, been found to be greatly enhanced by the homo-stimulative autacoids.

The lipoids are given a large amount of credit for this function. There seems to be no dissension from the statement that the electrolytes originate in the liver.

In summary let it be stated that the principles essential to life, found in the liver, have been proven to be autacoids:

That the pathogenesis from the altered state of the cellular action of the liver may be largely or entirely corrected by the administration of these autacoids, either orally or hypodermatically.

Biochemists have furnished the building material that each internists, surgeon or other specialist may use in erecting his individual superstructure of observation. However, clinical observations are essentially inexact because human subjects with changeful pathologic tissues disallow proof, as obtained by the physiologist in animal experimentation.

Nevertheless it is believed a distinct, specific, rational therapeutic principle is found in hepatic extract, which correctly exhibited, will effect a cure of the curable disorders of

the hepatic functions governing the sugar, the protein and the fat metabolism, and the functions of coagulogenesis and the bile secretion and excretion.

Hepatic extract may be administered hypodermatically from the one c.c. ampules or orally in the dry extract. It should be given in frequency and dose to suit the required result of each case.

"New Year" with all its hope in Science dawns,

Let doubt not cloud its light with human pawns.

DISCUSSIONS.

Henry G. Barbour: It will, of course, be impossible to do justice to the very stimulating paper read by Dr. Bate in the short space of time allowed for discussion; so many interesting features are suggested by the points he has emphasized. I regret that I could not have been present when he described some of the cases in which he has used hepatic extract. One needs to know more about the detailed evidence when favorable results have been secured.

I am sure Dr. Bate did not intend to imply that each function of the liver is necessarily represented by an extract which can be obtained from the liver. At least I think physiologists and pharmacologists will agree that we have a long distance to go before this could be asserted. Liver extracts, however, are coming into use, with a very definite scientific foundation.

As regards the reduction of blood pressure: In saline extracts of liver a material has been obtained which certainly accomplishes that purpose. Something of the sort was extracted by Vincent and Sheen as early as 1903, and depressor substances have been obtained from various other tissues. Popielski obtained a depressor substance from various tissues which he described as "vasodilatin." Abel has succeeded in crystallizing from various organs including the liver, a depressor substance resembling but much more powerful than histamine. Other investigators have described tissue extracts, including those from liver, with property of reducing blood pressure. Of course physiologists and pharmacologists want to see these things reduced to tangible form, and are hoping that chemists will be able to eventually show the exact nature of such substances. The purest known depressor substance from liver has been isolated by James, Laughton and A. Bruce Macallum of Western Ontario University. It is non-protein and ether-soluble. It differs both chemically and pharmacologically from both histamine and choline. Hepatic extract, in the hands of Major and other clinical observers whom Dr. Bate mentioned, has been found to reduce arterial hypertension, including the experimental high pressure produced by the administration of methyl

guanidine.

There are one or two other hepatic extracts which I would like to mention briefly. Howell of Johns Hopkins has isolated from the liver of dogs a substance known as heparin which is an anticoagulant and is perhaps identical with "anti-prothrombin." This at least is a very definite extract, soluble in water, which in extremely small doses can be used experimentally to keep the blood from coagulating. Howell mentions this in connection with hemophilia which disease, however, appears to be due to failure of the too resistant blood platelets to break down, and not to an excess of heparin.

Interesting experiments of Cannon of Harvard have been recently described in which the hepatic nerves were stimulated and cardiac action became faster. On this basis it appears that the liver furnishes something which may stimulate the heart. Cannon says this is not to be looked upon as an internal secretion as it occurs especially after protein feeding hence may be due to the amines which the liver splits off. These experiments were carried further in the laboratory of Asher of Berne who has produced a number of interesting facts. For instance by stimulating the liver the accelerating action of atropine upon the heart in animals has been converted to slowing, illustrating the dual action of chemical substances mentioned by Dr. Bate.

The last internal secretion of the liver which I wish to mention, although somewhat hypothetical, is of great interest. Professor E. P. Pick who holds the chair of pharmacology in Vienna has studied extensively the liver in relation to the retention of fluid in the body and with reference to diuresis. He has found, for example, after removal of the liver from a frog there is a tendency of fluids when introduced into the frog to produce swelling of the muscles. In animals, diuresis, from taking water by mouth, which would have occurred after several hours, has occurred immediately. In a child with liver tumor Pick found on the other hand that three-fourths liter of water by mouth, which would promptly produce diuresis in a normal individual, had no diuretic effect whatever. His theory is that the liver elaborates an internal secretion which regulates the power of the blood and tissues to retain water, thus controlling the water metabolism.

Along this line it may be interesting to mention the work of Lamson, professor of pharmacology in Vanderbilt University. He has performed considerable work in relation to water shifting to the liver, and has established in etherized animals a very interesting picture. Intravenous injection of 25 c.c. isotonic salt solution per kilo will cause an immediate dilution of the blood as shown by decreased hemoglobin, which within half an hour returns to practically the normal level.

When the same injections of fluid are used, after physiological removal of the liver by Eck fistula and obstruction of the hepatic artery, excess fluid remains in the blood for several hours. This has more to do—apparently with storage of water in the liver itself than anything else. It may, however, be interpreted ultimately under Pick's theory of hormone action. Naturally these problems present great interest in connection with getting the blood to retain fluid in conditions of shock, etc. where not only normal saline but dextrose and acacia and similar solutions quickly pass into the tissues. By improved experiments of this general type Drs. Spurling, Kinsman and I are trying to learn something more about those factors which help to keep fluid in the blood.

Very recently in the Laboratory of Physiology and Pharmacology of the University of Louisville, Mr. Frankmann and I have been administering phloridzin to dogs. After about forty hours the sugar has been mostly drained off through the kidneys and the carbohydrate of the liver cells has been replaced by fat. The production of an immensely fatty liver about forty hours after giving phloridzin is well known. (We killed one of the dogs and were then sure that we had a typical result).

We have found, what was previously unknown, that a dog with this kind of a fatty liver presents a more dilute blood than normal. Furthermore the blood retains injected Ringer solution much more tenaciously than when the liver was normal. This we have demonstrated by following the specific gravity of the blood at two minute intervals. A significant question now is, does the production of the fatty liver interfere with water storage in the liver itself, or with the action of a liver autacoid in blood or tissues? Both factors may operate.

Edward R. Palmer: It may seem a little out of order for a urologist to discuss a very elaborate and abstruse paper as this, but there are some points which have been mentioned that appeal to me particularly and I would like to stress them.

Dr. Bate made the statement in the early part of his paper that the body has undoubtedly in its own organism the power to cure all curable diseases. That is what I have believed for many years. Ever since the discovery that some micro-organism is the cause of most diseases, there has been a trend in two directions of modern medicine. The first trend, immediately after the discovery, was to say: "Now that we know what causes the disease, all we have to do is to remove the cause and the patient will get well." The search then began for drugs that would "annihilate the pesky microbes." The most of this work was done along the line of Ehrlich's ingenious side-chain hypothesis. At the time that theory was inaugurated I was demonstrator of

pathology in the University of Louisville. I embraced the theory and used to teach it with much gusto, and believed it to a very great extent. Out of that theory Ehrlich developed his idea of chemotherapy which is now raging in full force. I have recently seen an advertisement of Kolmer's new work on chemotherapy in which I suppose he discusses this idea very fully. I have not yet had the opportunity of seeing it.

Several years ago in a paper which I read before this society I made the statement that I believed the trend of modern medicine toward chemotherapy was a step backward instead of forward. I believe we should abandon the idea of attempting to kill micro-organisms, that we should recognize there is no such thing as killing micro-organisms in the body tissues, by means of chemicals. If micro-organisms are killed it is by the natural protective forces of the body, and our chemicals are simply aids or stimulating factors to those forces.

The other trend of modern medicine has been toward biological therapeutics, and I might mention that this is perhaps the most important feature in medicine today—biological therapeutics. This point was emphasized before this society by Dr. Morris several years ago in speaking of the different eras of medicine. After enumerating the various eras through which medicine had passed, he mentioned the biological era as being the most recent: Biological therapeutics has attracted a great deal of attention lately, and much stress has been placed upon the internal secretions, the endocrine system, hormones, chalone or autacoids, etc.

I believe every human being born into the world in an absolutely normal state of health is immune to every disease. Unfortunately, however, from the time of birth onward we are simply taking steps toward the grave and are rapidly becoming more and more abnormal in certain things. I do not believe any micro-organism can gain a foothold in absolutely normal tissues, because the body is endowed with mechanism to prevent that, but it is so easy to upset this delicate balance that germs readily gain a foothold. Even when this happens we are still endowed with machinery for overcoming disease thus produced. I believe the maintenance of life and the maintenance of immunity is due to the wonderful balancing and co-operative action of our internal secretions, the most importance of which perhaps are those of the liver, that master gland of the entire body. Therefore, instead of our running in a tangent and searching for chemicals that will kill germs, let us study what mechanisms we have to control diseases, the most important of which are the glands of internal secretion.

Dr. Bate spoke of the wonderful action of the autacoids. It seems to me that their action is similar to that of certain drugs, they are cata-

lizers. He says that they have a reversible action, they are either chalones or hormones, they have the power of activating or checking, depending upon the disease and circumstances, so it strikes me they are catalyzers, they are akin to the ferments in a way, they have either a stimulating or restraining action. So for us to properly handle diseases, whether they be surgical or medical, we should first determine how much the body itself is trying to master these diseases. Then, instead of trying to "throw a bombshell into camp and upsetting the whole works," we should administer our drugs, biological therapeutics, stimulators or restrainers, at the proper time in order not to upset the protective forces of the body.

Fred G. Speidel: In discussing the question of blood pressure it is wise to keep in mind the fact that blood pressure itself is due to certain factors which are not necessarily physiological but belong to what might be called in general terms hydrodynamics. In the first place the fact that we have blood pressure depends upon the pumping action of the heart. The height to which the blood pressure rises depends upon other factors, viz., the total volume of blood in the veins, arteries and capillaries; the peripheral resistance, i. e., the resistance to the outflow of blood from the arteries; the viscosity of the blood; and to some extent upon the elasticity of the vessel walls. When any new agent is introduced for the lowering of blood pressure, it should be clearly stated which of these factors controlling the pressure it operates upon. So far as I know that has not been done in the case of hepatic extract. Presumably its action is to reduce peripheral resistance or the resistance to the outflow of blood from the arteries or through the capillary bed. Whether that has been proven or is simply an assumption I do not know. We do know that there are certain substances in these hepatic extracts which Dr. Bate has mentioned, particularly histamin, which has such an effect, and most of the commercial hepatic extracts now on the market do contain histamin, at least it is so stated in the folders accompanying the packages.

We all see a great many patients with elevated blood pressure. We frequently find upon careful examination that such elevation is due to an abnormally strong pumping action of the heart, which usually means that the heart is overcompensating for its own defects. In the effort to perform the work which it is failing to accomplish the heart simply overdoes the matter. I think that is a frequent cause of arterial hypertension. Whenever there is an effort to compensate there is an accompanying tendency to overcompensate, this means overworking of the heart and high pressure. The administration of digitalis will frequently relieve the load on the heart and thus reduce the blood pressure.

We have further a large group of cases in which elevation of blood pressure is due to increased peripheral resistance through the kidney, the so-called arteriosclerotic kidney. In such cases the administration of hepatic extract, needless to say, will merely delay the onset of such symptoms as are usually due to the accumulation of nitrogenous products in the blood, viz., the various manifestations we know as uremia.

In addition to the two groups of cases mentioned, we have those known as idiopathic hypertension. This term is simply used as a cloak to cover our ignorance of the underlying process which is acting as a causative factor. It is sometimes due to toxins circulating in the blood, sometimes due to foci of infection, and sometimes due to psychic influences with which we are not conversant.

Whatever may be the cause of the hypertension, and whether this cause be clearly demonstrable with our instruments of precision or not, it is certainly advisable to utilize all of those methods which have been known in the past to reduce blood pressure, chiefly rest, both mental and physical, with dietary regulation, withholding salts in some cases, proteins and other nitrogenous bodies in others, and the removal of pus from the body wherever it can be found. After all of these things are used then hepatic extract may also be administered, but hepatic extract should not be used to the exclusion of all of those things which have been found in the past to be of value in reducing arterial hypertension.

With regard to Dr. Bate's excellent presentation: There is one point I would like to have him answer with respect to the woman with hemophilia whose mother also had hemophilia. It has been my understanding that hemophilia occurs exclusively in males and is always inherited from the mother; further that the disease is transmitted by the mother—never from the father—without the mother ever having manifested any symptoms of hemophilia.

With regard to Dr. Palmer's discussion of chemotherapy: I have had the pleasure of reading Dr. Kolmer's book which he mentions. I do not feel as Dr. Palmer does that the body has protective mechanisms against all forms of micro-organisms which may invade it. One of the most interesting chapters in Kolmer's book is on amebic dysentery and its effective treatment with emetin, which is a remarkable advancing step in the practice of specific medicine. Although the organisms are found principally in the intestinal canal, still they do invade the deeper tissues, and the administration of emetin represents considerable progress along this line.

R. Alexander Bate (in closing): I wish to thank the gentlemen who have participated in the discussion of my paper. Perhaps many of the points raised can best be answered by relating briefly some instances in connection with

certain clinical observations.

Arterial hypertension: It has been very definitely proven that hepatic extracts acts as a specific in the reduction of high blood pressure. The experiments by Major, cited in the paper, show that guanidine was administered to produce high blood pressure, and hepatic substance was then exhibited which caused reduction of the blood pressure to normal. Hepatic extract, therefore, acts as a true specific. In animals with normal blood pressure twenty times the usual dose of hepatic extract has absolutely no effect. These experiments led to the therapeutic application of hepatic extract for the reduction of arterial hypertension, and following moderate doses blood pressure was gradually reduced to normal.

The question of histamine has been mentioned: Hepatic extract may contain histamine, but it has a totally different action from histamine, as it is consumed as hormones, or hepatic autacoids, just as any other chemical agent becomes consumed or neutralized in the presence of certain other substances of different chemical reaction. High blood pressure produced by guanidine is overcome by guanidase which is an enzyme. When the action of guanidine is neutralized or consumed by guanidase, the blood pressure recedes to the normal level.

Now in regard to clinical cases with persistent arterial hypertension: Two such patients have come under my personal observation. As probably most of you know, Parke Davis & Company made (but did not market) for about three years hepatic extract prepared for hypodermatic administration. Since the statement came from the Canadian laboratory that a depressor substance, obtained from the liver, would reduce high blood pressure, there has been considerable demand for this substance. For some reason Parke Davis & Company ceased to supply this material for hypodermatic use and there was a period when it was not to be had. Several other pharmaceutical companies, however, have now placed the material on the market. I had several of the original P. D. & Co. ampules left when called to see a gentleman about 83 years of age who was having convulsions. He had been paralyzed on the left side following a previous illness. The cause of this I do not know, as there is no information concerning the relation of his paralysis to any other disease,—no syphilis. This gentleman had not been seen before by me. He had a history of systolic blood pressure of 250 mm. Hg. extending over a long period of time, and had eaten a dinner a few hours before this attack containing a large quantity of nitrogenous food. I was called to see him at his home; he was then having convulsions, and his blood pressure was 250. I immediately gave him one ampoule of P. D. & Co.'s liver substance. Apparently this had some effect on his

blood pressure as he began to slowly improve. Later he had another convulsion and was given a second ampoule and again improved. After another convulsion he was given the third ampoule of hepatic extract. There were no further convulsions. That was in December, 1925, and although the man was then 83 years old his health has been much better since. His blood pressure is now about 180 mm. Hg. Of course every other means at our command were used,—rest in bed, proper diet, etc. There have been no complications whatever. There had never been any albumin in the urine.

The other patient was a man aged 45 years who had been under the observation of several physicians because of renal disease and whose condition had been distressing. Under dietary and other forms of treatment his renal lesion became so much better that he had departed from his diet list and had a relapse. I was called to see him at night and found him in convulsions. This was during the time that P. D. & Co.'s ampoules of hepatic extract were not to be had. The patient was given by mouth a capsule containing liver and parathyroid substance. He was also given this by enema. He had several slight convulsions during that night, but within forty-eight hours he began to improve and no further convulsions occurred. His urine showed some albumin, but he continued to improve and in about seven months was sufficiently well to start to California. Unfortunately, however, he died on the way at New Orleans, La. It seems strange that this man, too, had paralysis of the left side. I mention the coincidence but know of no reason for it.

As to cases of hemophilia: The mother of the patient mentioned in my paper died from this condition. She was originally a patient of Dr. O. E. Bloch and had been seen by Dr. C. T. Wolfe and several other physicians. The daughter (my patient) had been delivered of three children; there was no hemorrhage from the uterus following any of her deliveries. After the extraction of a tooth she had a prolonged hemorrhage. Blood examination threw no light on this case. As mentioned in the paper, suprarenal substance has the effect of preventing the power of blood clotting and should therefore not be used in hemophilia. After the administration of hepatic extract this patient had other teeth extracted without hemorrhage. So far as I am aware there is no contraindication to the administration of hepatic extract.

I agree with Dr. Speidel that every means at our command should be used in combating arterial hypertension, but hepatic extract seems to act as a specific in cases due to disturbed nitrogen elimination.

LOCAL ANESTHESIA IN OFFICE
TECHNIQUE.*

By GEORGE E. VAUGHAN, Louisville.

As implied in the title of the paper, we wish principally to discuss the technique as generally used in the office when operating under local anesthesia. The choice of the anesthetics are novocaine, cocaine and butyn, and preference is given in the order named.

For the past several years a committee of the A. M. A. has made a careful study of local anesthesia and I presume most of you are familiar with this report. A few of the most important points will be mentioned. Novocaine in 1-2 to 1% solution stands pre-eminent as the choice for local anesthesia by injection and whenever possible it is to be selected. Due regard should be had for the toxic effects of whatever drug used and the minimum amount necessary for anesthesia administered.

Cocaine is in very bad repute today and a surgeon would almost be liable for damages should a fatality occur under its use by injection. On this account, and also as we have such a satisfactory substitute in novocaine, I have not used cocaine by injection for many years. However, it is my opinion that the objections to cocaine by application could be eliminated to a great extent by proper preparation of the patient and correct technique. In an extensive operation or where a large amount (5 or 6 grs.) of cocaine is to be used, a thorough physical and laboratory examination should be made. Also a few days preparatory treatment will determine if there is an idiosyncrasy to the drug.

The application of adrenalin previous to the cocaine is a good procedure thereby lessening the amount of cocaine to be used and consequently limiting the toxic systemic effect.

The prevention of shock is a great desideratum in all surgery. This is accomplished by limiting area of application, blanching the tissues, decreasing the blood supply. It is probable that many of the fatalities attributed to the anesthetic have been the result of shock. To meet this problem we should bear in mind the many causes of shock. Pain and loss of blood are generally recognized as the principal factors, but unquestionably it is frequently produced by impulses originating from the special senses, the eye and ear particularly. Although the crushing and breaking of bones in the nose may be painless the sound will often produce shock.

The sight of instruments often has a very disturbing effect upon patients, especially

children. This is noticed in one operation so frequently required in children, namely, paracentesis of the drum of the ear. Perfect anesthesia can be obtained by the local application of cocaine, phenol and menthol but if instruments are displayed or an operation is announced the child will become frightened and probably develop shock. However, if the patient is told we only intend to treat the ear the anesthetic can be applied and the operation performed without the child's knowledge, a towel being placed over the face to occlude vision.

We are told by Crile that shock may be produced through conductivity by the subconscious mind. It is also possible that it may develop in the mind, *per se*. This being true it is necessary in our technique to have regard for the mental composure of the patient, eliminating objectionable associations and probably through suggestion we may modify the pain and shock of the operation.

The recumbent posture is a very valuable aid in preventing syncope and shock. Very seldom will a patient faint when reclining and this position should always be adopted with a history of occasional syncope and when cocaine is used.

Another very important step in our technique is to fortify the patient against the toxic effects of the anesthetic and the development of shock by the administration of stimulant and anodyne drugs. Fortunately we have an ideal combination in morphine and atropine. This has been tested and proven by experience and should be given hypodermatically prior to every operation under local anesthesia, that is on adults. The amount given is 1-6 to 1-4 morphine and 1-150 to 1-100 of atropine according to the size of the patient and whether blond or brunette. Morphine by its sedative and anodyne effect renders the patient less susceptible to shock, more amenable to operative procedure and consequently less local anesthetic will be needed.

Atropine in my own experience has proven an excellent antidote to cocaine, overcoming the pallor and the leaking skin by its relaxing effect upon vascular spasm.

Whisky, very justly popular with our preceptors, should still be retained in our armamentarium. It is especially indicated in those patients having an idiosyncrasy to morphine, and occasionally as an adjuvant to the morphine and atropine. From a clinical viewpoint it acts very favorably as a quick diffusible stimulant promoting a sense of well-being and undoubtedly benumbing the sensory nerves.

The technique described has been followed as closely as possible in several thousand cases and has proven very satisfactory. As

*Read before the Jefferson County Medical Society.

the list of operations suitable for local anesthesia is constantly increasing I believe it is necessary in the interest of humanity as well as science to give more consideration to our technique.

DISCUSSIONS.

Claude T. Wolfe: Dr. Vaughan has given us a most excellent paper, and I can only speak of it in so far as concerns the use of local anesthesia in eye, ear, nose and throat work. Until the last few months I held the same opinion as expressed by Dr. Vaughan, that cocaine should be supplanted by novocaine; but at the recent meeting in Colorado Springs I asked Dr. Lille, who has charge of the ear, nose and throat department at the Rochester Clinic, what he thought about the matter and he said they used cocaine exclusively for the removal of tonsils. At the clinic they use the drug in strength of 1-5 of one per cent. When asked what advantage cocaine had over novocaine, he said he did not know that it had any advantage, but they had used cocaine in thirty-five thousand cases without fatality and with this experience, so far as his department was concerned, they intended to continue using cocaine.

Personally I never use cocaine as an injection. For tonsillectomy I prefer one per cent novocaine for injection and ten per cent solution of cocaine for topical application. I have seen no ill-effects from the injection of novocaine.

Butyn has supplanted the use of cocaine so far as local anesthesia is concerned about the eye, for removal of foreign bodies, etc. One drop of two per cent butyn solution is instilled and after waiting a few minutes another drop is instilled. In this way perfect anesthesia is obtained and the ill-effects of cocaine are avoided, such as drying of the cornea and slight dilatation of the pupil.

In myringotomy for the last year I have been using the cocaine, menthol and phenol mixture in both children and adults instead of general anesthesia. Under this type of local anesthesia the operation may be performed without pain or danger. After application has been made to the drum membrane and sufficient time has elapsed for blanching to occur, the excess solution should be removed, then a free incision can be made without causing the patient any discomfort whatever.

Samuel G. Dabney: I have enjoyed Dr. Vaughan's paper and think it is suggestive in many ways. I was particularly interested in what he said about morphine. For a time it was thought hypodermic injections of morphine were valuable in cocaine poisoning, but recent opinion seems to be to the contrary. It is true, of course, if one takes the pupil as an index, its dilatation would indicate morphine; but St. Clair Thompson in the latest edition of his book recently issued says it is inadvisable to administer

opiates in cocaine poisoning because of its depressing effect on the respiratory apparatus and it increases the effect of cocaine in that way. It is a little questionable whether it is generally advisable to treat a patient for cocaine poisoning by the hypodermic administration of morphine, though this is not quite the same as its preceding administration.

I was interested in what Dr. Wolfe said about myringotomy under local anesthesia with cocaine, menthol and phenol. This mixture has been on trial for at least a dozen years. I found that patients complained of pain from the application and for that reason I discontinued the method. I doubt if this form of local anesthesia is generally used for myringotomy in children. The acutely inflamed drum membrane causes the child considerable pain which is increased by application of the phenol mixture. I have found it more satisfactory to give the child chloroform. In older persons nitrous oxide gas and oxygen may be used if necessary.

I fully agree with Dr. Vaughan that few surgeons now inject cocaine. However, I am inclined to think that injections of one-half of one per cent solution in small amounts would rarely do any harm. The lethal dose of cocaine is uncertain. Small doses have been fatal and large doses have been taken without harm. For instance Dan Mackenzie gives the dose as one-fourth of a grain to one grain. Far more than that may be applied to the mucosa of the nose and throat. I happen to know of one very sad case of cocaine poisoning. A young man attending a prominent medical school of this country was to have tonsillectomy performed. By mistake of the interne a ten-per-cent solution of cocaine was poured into the bottle supposed to contain novocaine. A certain amount was injected and the young man died within a few minutes. Personally I have always had my cocaine in crystals or powder in papers containing one grain each and plainly marked so a mistake is unlikely to occur. In the case just cited the solutions were prepared beforehand and in that way a mistake was made.

I would like for Dr. Vaughan in closing to tell us the strength of cocaine solution he uses. Has he found twenty per cent necessary in any case, and whether he watches carefully the amount he uses. I have seen many operators simply dip a probe into the cocaine bottle and mop it in the nose. It would be impossible for them under such circumstances to know how much they were using, and it has always seemed to me if death ensued in a case of that kind the doctor would probably be embarrassed as he could not tell how much cocaine he had used.

A. L. Bass: There are two features to which I would like to refer in connection with Dr. Vaughan's paper. One is the use of morphine and atropine sulphate prior to local anesthesia

I formerly used atropine and decided it made patients nervous and irritable, they complained of dryness of the throat, wanted to drink water, etc. For some time I have been using morphine combined with scopolamine, when indicated, and graduating the dose according to the type of individual to be operated upon. The second point is preparation of the patient for operation: Have the patient's system in as normal state as possible, have a urinalysis made and if there is hyperacidity, indicanuria or any abnormality, correct it if possible prior to operation and you will find patients will stand the operation much better, they will not be nearly so likely to get sick, fainty, etc. If they have hyperacidity, alkalinize them. If they have an abundance of indican, cleanse the intestinal tract.

Just to illustrate one case: My sister rode about one hundred miles to the city via train one morning,—she is inclined to get "car sick" anyway,—that afternoon I saw her up in the office to do some nose work and she was so busy fainting that I had a hard time getting a chance to work. I sent her to the hospital and for three nights had her take two compound cathartic pills followed the next morning with one ounce of magnesium sulphate (saturated solution), and within four or five days when I sat her up in the office to remove her tonsils she did not give me a bit of trouble.

If you will take these factors into consideration in preparing your patient for operation under local anesthesia, I think you will find it worth while.

J. H. Hester: On a recent visit to the Mayo Clinic I found they were using as a preliminary morphine and scopolamine half an hour before beginning local anesthesia with cocaine. In that clinic they use cocaine as routine. For tonsillectomy I like morphine and scopolamine half an hour before beginning local anesthesia, but I use novocaine with suprarenin one-fifth of one per cent. I inject about an ounce of the solution behind the tonsil and by the time the injection is finished anesthesia is complete. Some one said novocaine was slow in its action. My experience is just the opposite, I have found that local anesthesia is obtained almost immediately.

In regard to the mixture cocaine, phenol and menthol for local anesthesia in performing myringotomy: I have obtained complete anesthesia in these cases by applying the solution on a pledget of cotton and left in contact with the drum membrane fifteen minutes. My experience has been that patients complain of little pain unless the drum membrane is highly inflamed. Where there is much inflammation the proper anesthetic effect is not secured.

Irvin Abell: I can only discuss the subject of local anesthesia from the standpoint of the general surgeon. I agree with the essayist that one

of the most important features in the use of local anesthesia is the avoidance of shock, if we include in that term nervous and mental upsets that are so frequently observed in patients who are to be operated upon under local anesthesia. I am satisfied that preliminary administration of morphine and atropine or morphine and scopolamine will very materially reduce these undesirable effects and it certainly not only facilitates local anesthesia but is of advantage in completing the operation. I have on more than one occasion had patients become faint and show signs of collapse while under local anesthesia, but say afterward that they suffered no pain from the mechanical procedure. If one knows the nerve supply of the part and takes time to inject it thoroughly and does his work as gently as he possibly can, there are very few operations which cannot be satisfactorily performed under local anesthesia. There are some operations in which we routinely use local anesthesia, such as suprapubic cystostomy, the first stage of prostatectomy, practically all tuberculous lesions, etc., using in addition a small amount of gas-oxygen to tide over such part of the operation as cannot be satisfactorily completed under local anesthesia alone. In certain types of goiter one may operate successfully under local anesthesia. In each instance it is advisable to precede local anesthesia with morphine and atropine, making a special point to secure the confidence of the patients giving them assurance that things will go along smoothly with them. When this cannot be secured one finds almost invariably that gas or some other general anesthetic must be used in addition.

I would like to emphasize what Dr. Hester said about operating upon inflammatory lesions under local anesthesia, as satisfactory anesthesia can not be obtained in the presence of acute inflammation. Where there is marked infiltration of the tissues with inflammatory deposits, where the sensibility of the part has been greatly increased by infiltration, local anesthesia—particularly if one is using infiltration anesthesia—of the part to be operated upon is not as a rule successful. If the location of the lesion to be subjected to operation will permit of block anesthesia, blocking the nerve supply to the part, then it is satisfactory, otherwise it is not. If one can successfully block the part with local anesthesia, he may easily perform nephrectomy or any other operation on the kidney. By blocking the nerve supply to the thyroid, injecting the plexus as it goes across the sternomastoid muscle in the line of incision, one can complete the operation for goiter very satisfactorily. Local anesthesia certainly eliminates some types of shock by obviating the extra strain on the heart and kidney, and it only entails a greater amount of time, greater gentleness in the surgical procedure and greater blocking of the nerve sup

ply of the part in which one is to use it.

W. Hamilton Long: Dr. Vaughan did not mention one diffusible stimulant indicated in cocaine poisoning, namely, ether, which enjoys quite a reputation. Ether is of considerable value when properly used by inhalation upon the appearance of symptoms, dilated pupil and shock-like manifestations, when due to true cocaine poisoning. Another thing about psychic and mental upsets must be remembered, and that is we know little about the subconscious mind and the psychological aspects of anesthesia. An adult who is frightened and apprehensive, and through gameness or pride masks all that, during general anesthesia can not mask it to an anesthetist who has had enough experience to detect the subconscious symptoms during the induction,—that patient will give trouble of a certain sort under general anesthesia and will be difficult to carry smoothly; whereas a child who is panicky with fear is perfectly anesthetized and will go through all right. If the adult is of a type who has no fear and is not apprehensive he will get along better under general anesthesia after it is induced than one who masks his fear and apprehension through pride or gameness.

As to preliminary medication: My choice would be morphine and atropine if preliminary medication is decided upon. I have had some unsatisfactory results from hyoscyne and scopolamine which are supposed to be physiologically identical. We have been led to believe that an apprehensive and frightful patient is quieted and calmed by the administration of scopolamine, but its action is sometimes exactly opposite. Occasionally one who is already excitable is completely upset and becomes crazy apparently from scopolamine. We know that scopolamine sometimes in seemingly rational persons will drive them into temporary insanity.

Fred L. Koontz: The point raised by Dr. Dabney in regard to the use of morphine is very interesting in connection with local anesthesia. First of all, I do not believe as routine it is advisable to administer morphine to prepare the patient for operation, though it may be sometimes advisable in selected cases. However, following any sort of collapse, whether psychic or due to shock, morphine is absolutely indicated and will clarify the situation promptly. It becomes a question, of course, of differential diagnosis between shock and true toxemia from the poisonous effects of drugs. This point can be readily determined by a few minutes observation. In toxic conditions the patient becomes rapidly and progressively worse, whereas in psychic conditions he will remain in a state of pallor and shock, the pulse and everything else being about the same. In cases of this kind morphine will bring about almost immediate improvement.

I prefer not to administer morphine, scopolamine or any other drug as a preliminary meas-

ure to local anesthesia. Greater attention should be devoted to the psychology of the situation. We should take more time to talk with the patient, explaining the situation and telling just what we are going to do. In this way we can dispel fear and prevent excitement. Tell the patient that you are not going to hurt him. If you tell him you are not going to hurt him, then don't hurt him. I always say to the patient when undertaking any operation under local anesthesia: "I am not going to hurt you and don't want you to resist; if I hurt you tell me so and I will stop." Never lie to the patient when you are trying to gain his confidence, and when once this is gained the operation can be successfully completed.

Dr. Vaughan spoke of preparation of the patient prior to local anesthesia: I have already mentioned the administration of drugs. We can get the patient in good condition if we will take the necessary time. This is a fault with many of us who are using local anesthesia especially for minor operative procedures. We should stop and think a few minutes, take time to explain the situation thoroughly to the patient, devote more time to the technique and the preparation of the local site of operation, the blocking or infiltration or whatever method of local anesthesia that is to be used, in that way we will be able to accomplish a great deal. After all it is a matter of technique. I have come to the conclusion that very few doctors really know what the proper technique of local anesthesia is. I know that I have been successful in most of the cases undertaken and have gotten along fairly well, but sometimes I find it impossible to get local anesthesia. There are two circumstances under which local anesthesia should not be used, first where there is serious injury with crushed tissue, and second where nerve damage has occurred. Day before yesterday I amputated three fingers under local anesthesia. There was one area on the index finger where it was impossible to get anesthesia with novocaine. Even when I blocked the proximal end there was no anesthesia in that one spot. The question of posture of the patient to be operated upon under local anesthesia is important in connection with hemorrhage.

The best work in local anesthesia that I have seen was by Skillman, of Philadelphia. He emphasizes the necessity of obtaining perfect control and confidence of the patient before anything else is done. I have seen him almost talk the patient into an anesthetic state before he injected a single drop of the solution.

Dr. Abell mentioned an important point in regard to local anesthesia of inflammatory tissue. We should never undertake infiltration anesthesia of an inflamed area, I believe it actually does harm. The tissues are already subjected to increased tension, there is as much pressure

as the tissues can withstand, and by increasing the pressure with infiltration anesthesia we not only injure the nerves but also the blood vessels and may get sloughing following operation. In cases of that character block anesthesia is the method of choice. After all the most important feature in local anesthesia is proper technique.

George E. Vaughan (in closing): I wish to thank the gentlemen for their liberal discussion of my paper. With reference to the injection of weak solutions of cocaine for local anesthesia in tonsillectomy: Personally I have never seen any bad effects from this method, but after the committee on local anesthetics of the A. M. A. reported unfavorably on it I thought it impractical to continue its use. They mention in their report that there are quite a number of excellent men throughout the country who persist in the use of cocaine by injection for the removal of tonsils, etc., just as some people still persist in using chloroform for general anesthesia.

In regard to anesthesia of the ear drum: I have never felt satisfied that cocaine added much to the anesthetic effects for application to the drum, but it may be an adjuvant. The action of carbolic acid conforms to the idea expressed by Dr. Abell and Dr. Koontz, that we cannot get anesthesia in the presence of inflammation with cocaine, but it is possible to get it with carbolic acid.

I have had no experience with the use of morphine to counteract the toxic effects of cocaine after they have developed. I think very likely it may produce good results, but I have always tried to prevent the development of this complication. I am glad to hear that morphine is beneficial in such cases and would be glad to know more about it.

The administration of morphine and scopolamine as a preliminary measure was a routine procedure with the late Dr. Prince, of Springfield, for many years. I tried this combination but do not like the effect of it as well as I do morphine and atropine, especially when much cocaine is used. It has seemed to me that atropine is almost a direct antidote to cocaine which point was mentioned in the paper.

The effect of adrenalin is a very much disputed question. The combination of adrenalin with cocaine and with novocaine has been used very extensively, and it seems to me that the unfavorable symptoms which occasionally develop could just as well be attributed to the cocaine, the novocaine or shock as well as to the adrenalin. However, it is important that the strength of the solution be noted so that the total amount of adrenalin used can be properly estimated.

Dr. Koontz is exactly right as to the psychic condition. With the surgeon and patient in rapport, the confidence and mental control obtained, the operation is greatly facilitated.

MEASLES, THE PROPHYLACTIC USE OF CONVALESCENT WHOLE BLOOD IN TWENTY CASES.*

By GORDON S. BUTTORFF, Louisville.

Prevention is fast becoming the keynote of modern medicine, and considerable investigation has been undertaken to prevent and check those diseases which produce immune bodies, chiefly the acute exanthemata and diphtheria.

The first notable achievement in this direction was the successful vaccination against smallpox introduced by Jenner in 1796. Later diphtheria and typhoid fever were conquered by the immunity resulting from toxin-antitoxin administration and the typhoid vaccine respectively, and now it seems that the work of the Dicks and Doehez is sufficiently authentic to promise an active immunization against scarlet fever. If I were to prophesy. I should say it is but a step into the future when whooping cough, chickenpox and measles will be preventable, and the old saying among the laity and even among some physicians, "Let the child catch the contagious diseases while he is little and he won't have to worry later on," will have to be exchanged for the better one, "Immunize your child while he is young and stamp out the childhood diseases."

At the present time, the prophylaxis of measles comes most nearly occupying the center of the stage of investigation. Measles is probably more easily spread than any other communicable disease and with its complication, bronchopneumonia, is one of the two most fatal in early childhood. It is little wonder, then, that clinical and laboratory research have for years been directed toward ascertaining its etiology and immunology. Vaccines, citrated and whole blood, and serum from convalescent measles patients, serum from artificially produced vesicles in convalescent cases, have all been tried.

Herrman (1) inoculated the nasal mucosa of infants, with nasal mucus obtained twenty-four hours before or after the eruption in a case of measles. This method is impractical for many reasons. By far the greatest number of experimenters have made use of serum from patients recently convalesced from measles. This produces only a passive immunity lasting probably from two to four weeks depending on the individual and the amount of serum injected. (2) The one drawback is, of course, the difficulty in obtaining sufficient serum since about 5 to 10 c.c. are required for each patient, according to Park. (3) A

*Read before the Jefferson County Medical Society.

similar amount of whole blood was used with success by Haas and Blum (4). It is to be hoped that the convalescent goat serum resulting from the reaction of infection of the green producing measles diplococci after the method of Tunnicliff and Hoyne (5) may soon be perfected and placed on the market. Probably the most desirable effect of the serum would be attenuation of the disease so that an active immunity would result without any harmful sequelæ. The conclusions in a recent article by Hoyne and Gasul (6) are worthy of note:

"Tunnicliff's immune measles serum has been in our experience of definite value as a prophylactic for measles. If the serum is administered to contacts not later than the fifth day of exposure, always counting the day of onset as the first day of the disease, protection seems assured in about 90 per cent.

Those who receive serum early, yet are not wholly protected, pass through an attenuated form of disease. The serum produced no deleterious effects, regardless of age or physical condition of the patients in whom it was used. The advantages of the Tunnicliff serum, as compared with convalescent measles serum, are evident when the question of supply is considered. Ultimately, it is hoped, the Tunnicliff serum will be easily available for all who desire it, whereas a similar situation can scarcely be hoped for in respect to human convalescent serum."

Tunnicliff and Hoyne (7) have made further observations on the use of immune goat serum to the effect that if as much as 5 c.c. of the serum are administered within the first three days of exposure, 97% are protected for a few weeks. If given on the fourth day or after, more than 5 c.c. are necessary. Exper-

Case	No.	Age	Sex	Days after exposure	Sub- stance	Am't	Injection Site of	Results	Remarks	Pt. Conv. Days	Cot.
C. B.	1	5	M	2 or 11	Whole blood	6 c.c.	Thigh Muscles	Protect- ed		10	6
E. N.	2	5	M	2 or 11	"	8 c.c.	"	"		11	6
W. M.	3	4	M	2 or 11	"	5 c.c.	"	"		10	6
G. F.	4	3	M	8 or 10	"	8 c.c.	"	Mild Measles Died e Bron' Pneu.	Brother had Measles	9	6
E. K.	5	4	M	1 or 11						9	6
L. B.	6	5	M	1 or 11	Oxalat- ed Bld.	10 c.c.	"	Protect- ed	Took care of lad e Measles	23 14	6 8
J. S.	7	16	M	1	Whole blood	3 c.c.	"	"	2 sisters e Measl.	12	1
E. F.	8	11	F	1 or 13	"	10 c.c.	"	"	Brother e Measl.	12	2
D. C.	9	12	M	2	"	10 c.c.	"	"	Sister e Measl.	13	5
T. B.	10	9	F	½	"	10 c.c.	"	"		27	14
H. B.	11	7	M	6	"	10 c.c.	"	"		20	14
W. R.	12	9	M	6	"	10 c.c.	"	"		30	14
L. C.	13	10	M	6	"	10 c.c.	"	"		26	14
H. B.	14	11	M	6	"	10 c.c.	"	"		29	14
C. W.	15	9	M	6	"	10 c.c.	"	"		19	14
R. R.	16	10	M	6	"	10 c.c.	"	"		21	14
B. H.	17	11	M	6	"	12 c.c.	"	"		17	14
J. F.	18	10	M	6	"	12 c.c.	"	"		20	14
M. B.	19	9	M	6	"	12 c.c.	"	"		24	14
J. T.	20	9	M	6	"	12 c.c.	"	"			

iments are now in progress making use of concentrated immune serum.

During an epidemic of measles at the Louisville and Jefferson County Children's Home in March and April, 1926, I injected blood from convalescent cases into twenty children known to have been exposed to measles. As the institution is arranged on the cottage plan, I worked by cottage, selecting especially children who had been associating with a new case of measles, e. g., brothers, and those designated to look after certain little children, a custom used to assist the matrons. As all of the children in the institution have a blood Wassermann no further tests were made the only precaution being that it was negative. Since cases developed from day to day in certain cottages it is difficult to state the exact day of exposure in many of them, and therefore two figures are given in some instances. Whole blood was used in all cases except one in which I used oxalated blood merely to see if the oxalate would have any deleterious effect on the antitoxic properties of the blood, and apparently it did not. Whole blood was used in preference to serum because of the lack of facilities for obtaining the serum. My procedure was to place the convalescent parallel to the recipient in the same room, withdraw the blood from the median basilic vein of the convalescent, change needles and inject at once into the quadriceps femoris muscle of the recipient. A slight degree of soreness was present the following day at the site of injection, but otherwise there were no untoward effects. In all instances the children selected as recipients gave a negative history of measles.

SUMMARY

Twenty cases known to have been exposed to measles, were injected with amounts of whole blood varying from 3 c.c. to 12 c.c. or an average of 9 1-2 c.c. One child developed a mild form of measles but succumbed to a virulent bronchopneumonia contracted three days after injection of the blood. The patient from whom the blood was drawn, was only nine days convalescent from measles and therefore may not have developed sufficient antibodies. Another factor to consider is the fact that the child who died had been exposed to measles eight or ten days previously.

Despite the fact that the majority of the cases had been exposed over three days, the number mentioned by Tunncliff and Hoyne (7) as being the maximum for proven results, yet nineteen or 95% were rendered passively immune.

The children varied in age from three to sixteen years with an average of eight and one-half years. A peculiar coincidence, and one which greatly mars the conclusiveness of

the results, was the fact that in each cottage no additional cases of measles occurred after the known contacts were injected, the one exception being the child that died.

The fact that my dosages were well over the 5 c.c. recommended by Tunncliff and Hoyne (7), may have been responsible for the high rate of protection afforded, since the cases had practically all been exposed over three days.

While definite conclusions cannot be drawn from this work, I do believe it was a valuable means of limiting an epidemic in the institution. When the first injections were made, thirteen cases of measles had occurred, while at the conclusion of the epidemic fifty-three cases had occurred.

The procedure seems well worth while in limiting epidemics in institutions and even in private families, and although the immunity is probably only from two to four weeks, I believe it is but a step into the future when an active immunity can be attained.

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DISCUSSIONS.

William A. Jenkins: As we all know work of the character described by Dr. Buttorff is very much in the public eye at this time and a great deal of it has been done. It has been fairly well established for some time that the antibodies to measles are found in the blood, both in whole blood and in separated blood serum, and both have been used very successfully in the prevention of the disease.

Two gentlemen in the research department of Parke Davis & Company's Laboratory have been working on this question for some time. They think they have definitely isolated the type of streptococcus that produces measles. They have really brought forward evidence that seems fairly conclusive. They have made tests to determine the susceptibility of the individual to measles, then used their serum for the production of temporary passive immunity, also blood serum taken from a measles convalescent, just as early as possible after exposure. Even if these measures do not prevent an attack, they have reasonable hope the severity of the disease will be reduced and very likely severe sequelae prevent-

ed.

The greatest amount of work along this line was done by Dr. R. H. Cowley and his associates at Berea College, Kentucky, about a year ago. They had a large series of cases and employed careful laboratory methods to separate and preserve convalescent serum. They used this with exceedingly gratifying results in producing temporary immunity in exposed cases. They even went so far as to send a supply of the serum to Dr. A. T. McCormack of the state board of health.

I apprehend that eventually, but it may be a long time, that we will be in position to avail ourselves of a regular antitoxin in the treatment of measles. We will have an antitoxin mixture by which we can produce active and perhaps permanent protection from the disease. We will have convalescent serum for patients who have developed the disease if it has not progressed too far.

As I said in the beginning this work is very much in the public eye at the present time and it is very well worth while.

S. C. Frankel: I have had some personal experience in the use of convalescent blood serum distributed by the state board of health. It was my observation that although it did not act as a prophylactic agent it did modify to a considerable extent the severity of measles. The serum was used in families where there were several children one of whom had measles and the others had been exposed. While all the children to whom a prophylactic dose of serum was administered developed measles, in all of them the disease pursued a very mild course. If we are ever to use convalescent serum in an extensive way in measles, some method will have to be evolved for obtaining the serum other than from the human subject.

Dr. Buttorff has described a very interesting series of cases in which whole blood was injected as a prophylactic. He is to be commended for his excellent work. In using whole blood of course a much larger supply can be obtained than where we depend upon serum. I wish Dr. Buttorff would tell us in closing whether any of the children developed abscesses at the sites of injection? I believe such results have been reported.

My personal experience with convalescent serum has been that if the disease develops it is much milder than when a prophylactic was not used.

E. A. Cohen: Dr. Buttorff has given us some very interesting information. Within the next few years it is possible we will be able to prevent practically all the infectious diseases of

childhood by the use of prophylactic sera.

In September and October, 1925, I was interne in the measles service of the Willard Parker Hospital, New York, and had an opportunity to study many cases. In some of the orphanages they were using the serum supplied from Centre University. Prophylactic doses were administered, but the results were apparently unsatisfactory. In one institution in which a measles epidemic developed every child was given the serum, but practically every child developed the disease and was brought to the Willard Parker Hospital. It was thought that the serum might not have been active, although it was obtained from a strictly reliable source.

I was interested in what Dr. Frankel said about the attack of measles being milder in cases in which serum was administered. I do not recall the mortality at Willard Parker in the group of cases in which serum had been used.

The injection of whole blood raises a very interesting point. If this method is effective the whole blood can be secured with considerable less difficulty than the serum. With the whole blood it would be a very simple matter, when there are several children in a family, to use the child with measles as the donor and inject its blood into various other members of the family.

Gordon S. Buttorff (in closing): I have nothing to say in closing except to reply to the question raised by Dr. Frankel as to the likelihood of induration or abscess formation following intramuscular injection of whole blood. In no instance did an abscess develop at the site of injection in the series of cases reported, although of course the number is too small to draw definite conclusions. However, we seldom see induration or abscess formation following the use of whole blood intramuscularly as it is often used in transfusions for hemorrhage of the newborn. The reason for the use of whole blood in this series of cases was simply a matter of convenience.

Anesthesia by Ephedrine, Epinephrine and Potassium Sulphate Mixture.—Read and Lin assert that a mixture of ephedrine with epinephrine and potassium sulphate can produce, by the wheal method, local anesthesia equal in intensity to that obtained by a mixture of similar proportions and strengths of procaine hydrochloride, epinephrine and potassium sulphate. The nature of this ephedrine anesthesia is not apparent, for simple solutions of this alkaloid do not produce wheal anesthesia. The synergism produced with epinephrine and potassium sulphate suggests a definite chemotherapeutic relationship between these three compounds. It is suggested that for dental surgery and ophthalmologic work, this mixture may prove of service.

CONGENITAL HYPERTROPIC PYLORIC STENOSIS: CASE REPORT.*

By JAMES W. BRUCE, Louisville.

The following case of congenital hypertrophic pyloric stenosis is believed to possess sufficient interest to warrant detail record.

Baby L., the first born of normal parents, weight nine pounds. Labor was without incident worthy of note. At birth it was observed that the baby had a large hematoma over the parietal bone, but this had no bearing upon the subsequent history of the case with the exception to be mentioned.

The child was breast fed for two weeks. The attending physician then evidently believing the mother's milk was insufficient had her wean the baby. Artificial feeding was started and the baby began immediately to vomit. However, as the subsequent history clearly indicated the existence of pyloric stenosis it is probable the artificial food had nothing to do with the vomiting and was merely a coincidence. Vomiting began on the fourteenth day and gradually increased in severity.

I was called in consultation when the baby was twenty-one days old. By that time the child was markedly dehydrated and weighed only seven pounds, having lost two pounds since birth. During the succeeding forty-eight hours we gave the baby only thick cereal with the hope this might have some effect on the pylorus. The thick cereal was retained and the fluid vomited, which always happens in serious cases of this type. We then injected 50 c.c. of the father's blood citrated intraperitoneally. The reasons for selecting the intraperitoneal route were: the arm veins of the infant were so small that the needle could not be introduced without making an incision, and the fontanel was so obscured by the large hematoma that the longitudinal sinus could not be accurately located.

The child showed some improvement the next day and the Ramstedt operation was decided upon. During the twenty-four hours preceding the operation we gave a second intraperitoneal injection of 50 cc. citrated blood and on two occasions during the day 200 c.c. ten per cent glucose solution by hypodermoclysis. At time of operation the condition of the child was much more favorable than it had been for several days before.

The classical Ramstedt operation was quickly performed. When the abdomen was opened the only evidence found of the intraperitoneally injected blood was two small currant-jelly-like clots, not more than 2 c.c. in quantity. The omentum appeared engorged with red blood cells. Aside from that the periton-

eal cavity was clear. The baby was given several hypodermoclyses of ten per cent glucose solution during the next few days and had an uneventful convalescence.

One point of particular interest to me was what became of the intraperitoneally injected blood. It is the first case in which I have injected blood intraperitoneally and afterward had an opportunity to see what became of it. Within twenty-four hours after the injection the blood had all been absorbed except the two jelly-like clots mentioned.

Another interesting feature is that the blood apparently was directly absorbed by the omentum. We have hitherto been led to believe that, in cases of this kind, the red blood cells found their way into the circulation only through the lymphatics of the inferior surface of the diaphragm; but it would seem that we must also consider the possibility of absorption of red cells by the omentum and the peritoneum.

DISCUSSIONS.

L. Wallace Frank: Dr. Bruce's observations are very interesting, particularly from the fact that the operation was performed after the intraperitoneal injection of blood. We had a not dissimilar case, the blood being given for an entirely different condition, in which a child received three intraperitoneal injections of whole blood, and was operated upon three weeks afterward. There was found no evidence of adhesions nor was there any accumulation of blood. Exploration was made as complete as possible through an upper abdominal incision.

As to the fact that the omentum may absorb material from the peritoneal cavity: I believe that is unquestionably true. Although we have considered, as the greatest factor, the peritoneum under the diaphragm, we know that the omentum does absorb exudates and the abdominal cavity becomes free of infection. I see no reason why it should not take care of blood cells as well.

Regarding the age of the patient mentioned by Dr. Bruce: We had one this summer in our service at the Children's Hospital in a child of three weeks, the symptoms appearing within two weeks after birth. Apparently no definite line of treatment had been followed. The family had changed physicians two or three times and finally one was called who recognized the condition as pyloric stenosis and sent the child to the hospital. It was evident from the roentgenographic study that obstruction was practically complete. A Ramstedt operation was performed immediately. A large section of omentum was placed over the pyloric incision, not fearing that we had injured the mucosa, but as an extra precaution. The child was operated upon early one morning and at five o'clock in the afternoon was given mother's milk somewhat di-

*Read before the Louisville Medico-Chirurgical Society,

luted and the next day was fed entirely on mother's milk, and had no further trouble.

With all due respect to those who believe in medical treatment, I think pyloric stenosis is strictly a surgical lesion. It has always been a source of wonderment to me that any of these little patients get well under the milder forms of treatment. It is granted, however, that the surgeons only see the cases that are most severe and where medical treatment has been of no benefit. The milder types of the affection, i. e., pylorospasm, where the patient responds to medical treatment, are never seen by the surgeon. In those patients coming to operation, in whom pylorus looks like a piece of cartilage, one wonders how medical treatment can possibly do any good.

We would urge early diagnosis and operation in all cases of hypertrophic pyloric stenosis of infants. The mortality increases greatly with delay of the operative treatment. Many such will have to be built up with infusions and blood transfusions. Should surgery be instituted early such measures would not be necessary and the mortality would be greatly diminished.

Wm. Redin Kirk, Hendersonville, N. C.: I would like to report an observation in regard to absorption from the peritoneum: We have had considerable experience with the quartz lamp in tuberculous peritonitis, and have found that this light helps very materially in hastening absorption of the exudates. I have wondered what effect this light might have in aiding absorption in other peritoneal effusions outside of tuberculosis. We have found in cases of tuberculosis that fluid in the abdominal cavity is absorbed much more rapidly under treatment with the quartz lamp, and we are using it constantly.

Gavin Fulton: I have seen quite a few cases of hypertrophic pyloric stenosis in the number of years I have been practicing medicine. The duration of the disease ranged between two weeks and four months. In the latter case the diagnosis had not been made until we saw the child, but he had been treated medically and the food was change repeatedly without benefit. Operation was performed at once and the child made a satisfactory recovery.

In the case reported by Dr. Bruce I do not believe the change of food had anything to do with the development of pyloric stenosis. In the majority of these cases the pylorus shows no active sign until about the fourteenth day after birth, then it becomes evident by vomiting and sooner or later a palpable tumor. If stenosis exists vomiting begins regardless of the type of food given.

I do not believe anyone disagrees with Dr. Frank that pyloric stenosis is a surgical affection. Operation gives the child the only chance of recovery. However, I think it is permissible to administer belladonna, not to cure pyloric

stenosis, but to differentiate it from pylorospasm. If the latter condition exists, belladonna will afford relief. If pyloric stenosis is present, operation is imperative. True hypertrophic pyloric stenosis must be treated surgically to save the life of the child.

James W. Bruce (in closing): In regard to the administration of atropine in pyloric stenosis: This drug was first used in 1918 by Haas who gave tremendous doses. He started with 1-1000 grain and increased the dose 1-1000 grain before each feeding until the physiological effects were noted, such as flushing of the child's face, etc. I recall one case in which 1-16 grain of atropine was given during each twenty-four hours for two weeks and yet the child showed no evidence of belladonna poisoning. The baby was six weeks old when the administration of atropine was started.

As to whether the treatment of pyloric stenosis should be medical or surgical: That is a difficult question and must be decided in each individual case. There are cases which respond to medical treatment and others which do not. Some of these little patients, having all the symptoms of pyloric stenosis, such as projectile vomiting, palpable tumor, visible peristaltic waves, loss of weight, etc., under massive doses of atropine, thick cereal feeding and careful nursing will recover in the course of thirty to sixty days. On the other hand many cases do not respond to medical treatment, and no one should persist in it if the baby fails to improve.

What usually happens is that the child retains the thick cereal and vomits the fluid. The reason for that is the thick cereal cannot be ejected. A baby in such condition should be operated upon immediately because it is impossible to maintain life for a great length of time and no one should take the chances. However, many patients respond remarkably well to medical treatment and it should be tried for a few days as a therapeutic test. After the fourth month the symptoms usually subside; that is to say, in cases that are going to respond to medical treatment, the vomiting subsides when the child is three or four months old. If we can tide the patient over until that period operation may be avoided.

Pre-operative treatment is an important feature: These babies are so markedly dehydrated that they need an abundance of fluid. Glucose or other solutions should be given until the skin has lost that dry, leathery appearance that dehydrated skin has. Also one or two blood injections or transfusions may make a great difference in the ultimate outcome.

Post-operative feeding is important. Breast milk is most essential and other fluids must be freely given to avoid further dehydration. With careful pre-operative and post-operative care the mortality from surgical treatment is very low.

CHOLECYSTO-GASTROSTOMY.*

By J. DUFFY HANCOCK, Louisville.

We feel that the comparative rarity of the operation justifies our reporting a cholecysto-gastrostomy performed for the relief of cholemia.

The cholemia in this case resulted from occlusion of the common duct by pressure of a carcinoma of the head of the pancreas. While any part of the pancreas may be the site of malignancy and give the rather characteristic symptoms of indefinite digestive disturbances plus very rapid loss of weight and strength, it is only when the head of the gland is involved that we observe in addition a gradually deepening persistent jaundice. Very often, as in the case to be reported, this complication will give rise to the first symptoms that cause the patient much concern. The gradual backing up of the bile results in dilatation of the gall-bladder, unless the walls have been rendered inelastic by previous disease, then increasing back-pressure in the liver, causing some distension, and finally jaundice with its generalized itching, dysuria, tendency to hemorrhage, etc. Relief of such symptoms will add much to the patient's comfort.

It is obvious that such relief may be obtained in one of two ways, viz., by draining the bile to the outside of the body through a permanent cholecystostomy, or by establishing a new passage within the body enabling the bile to flow around the point of obstruction. This new route may be formed by suturing an opening in the fundus of the gall-bladder to one in the stomach, duodenum, jejunum, or colon. An external biliary fistula will require much care, cause unpleasant skin irritation and may necessitate a later operation if luckily the "malignancy" should prove to be a severe chronic pancreatitis. These reasons I believe should lead us to ignore such a procedure unless a previous or coexisting cholecystitis or cholelithiasis has resulted in a contracted, firm-walled gall-bladder.

Of the various anastomoses the one to the colon was the first attempted. Most unions, however, have probably been made with the duodenum, but lately, since we have learned more of the comparative harmlessness of bile in the stomach more men are doing cholecysto-gastrostomies which many believe the easiest of the operations. This was the method pursued in the following case:

Jeff Williams, colored, fireman, aged 62, native of the West Indies but a resident of Kentucky for 35 years, applied for treatment on December 19, 1925, complaining of intense generalized itching, pain in right side of ab-

domen, weakness and loss of appetite. His previous history was unimportant in so far as it could be obtained. His health had been very good until about three months before when he began to have severe attacks of intermittent pain in right upper quadrant of the abdomen. These attacks bore no relation to the intake of food. He did, however, begin to lose his appetite and strength, developed a yellowish discoloration of his eyes, and a general itching that has been progressive.

Physical examination disclosed the fact that he had pyorrhea, emphysema, and some cardiac enlargement. There was decreased tone of abdominal wall and a small soft tumor mass (probably gall-bladder) was palpable in the right upper quadrant where there was also definite tenderness. Remainder of the examination was negative. The urine showed the presence of bile, a trace of albumin, and a few hyaline casts. The blood Wassermann was negative. The stools were not remarkable except that they did show a deeper color than would be expected. The Graham X-ray test did not visualize the gall-bladder.

We made a tentative diagnosis of carcinoma of the head of the pancreas, but advised exploration because of the possibility of gall stones being the principal or a contributing factor in causing his trouble. Even if this were not so we hoped to relieve some of his discomfort by drainage of the bile. The patient was quite miserable and consented to the operation which was done on December 26, 1925. Because of his general condition we decided to begin with local anesthesia (1% novocain) and succeeded in completing the entire operation without the need of a general anesthetic. A high, curved, right rectus incision was made and exploration of the upper abdomen disclosed a markedly enlarged and distended gall-bladder and a rather circumscribed, very firm, nodular area in the head of the pancreas. No calculi were palpable in any of the biliary passages and we were unable to find any metastases. The duodenum, as is generally the case, was rather firmly bound down, therefore, we decided upon an anastomosis of the gall-bladder to the stomach which method we really preferred anyhow. The gall-bladder was accordingly drained and the fundus freed sufficiently to appose an opening there to one in the anterior wall of the distal 1-3 of the stomach. The openings were then sutured to each other, after the manner of an anterior gastroenterostomy, no clamps being used. Rubber tissue was used for drainage and the abdominal wound was closed in layers with plain and chromic catgut and silk-worm stay sutures.

The patient had a moderate reaction which

*Read before the Jefferson County Medical Society.

was controlled by morphine, digitalis and subcutaneous saline. Fluids by mouth were allowed after 24 hours. Even that soon the itching was much less and disappeared entirely in a few days. The drain was removed on the second day and the remainder of the patient's stay in the hospital was uneventful. We lost trace of him after his discharge on January 14, 1926, but I have since located his wife who told me of his subsequent progress. She said that the itching never returned, that his appetite remained good and that there was little pain or tendency to constipation. However, he became gradually weaker and more emaciated, dying apparently of exhaustion in May, 1926.

A study of this case has suggested to us that there may be a greater field of usefulness for this operation, especially since gastroenterostomy might be done at the same time if the duodenum were occluded or gave evidence of soon becoming so.

DISCUSSIONS.

M. Casper: At the recent meeting of the Southern Medical Association in Atlanta, Georgia, the subject of cholecystogastrostomy was discussed at considerable length by some of the illuminati of the surgical section. Dr. J. Shelton Horsley, Jr., described a great many experiments on dogs where the gall bladder was anastomosed not only with the stomach but also the small and large intestine, and his conclusions in brief were that it made no difference whether the anastomosis was made with the stomach or the small intestine as the results were the same. He advised against uniting the gall bladder to the colon as that was a much more serious procedure from a fatality standpoint, but attachment to the stomach and small intestine was a comparatively safe operation on the dog. His results were carefully checked by autopsy and it was found without a single exception that all dogs had hepatitis in more or less severe form. Findings constant, though observation varying in time between operation and autopsy from one month to twelve months, his conclusions were that the operation from this standpoint was not feasible. Another surgeon of equal prominence reported a large number of operations of this kind upon human beings, and even went so far as to advocate its use in the treatment of peptic ulcer instead of gastroenterostomy. He considered cholecystogastrostomy the preferable procedure as the presence of alkaline bile in the stomach would overcome the acidity. Many cases were reported in which the results appeared to be satisfactory. Several years ago he reported a smaller number of cases in which the outcome was favorable. His conclusions were, therefore, in favor of cholecystogastrostomy.

I thought these statistics might be interesting in connection with the splendid report made by

Dr. Hancock.

R. Glenn Spurling: It was my privilege to assist Dr. Hancock on this case during the time when I was resident surgeon at the Louisville City Hospital. I wish to bear testimony to the splendid result he obtained. It might be of interest to say a word about the history of this operation.

Prior to 1882 a patient suffering from chronic obstruction of the common duct was subjected to a permanent cholecystostomy. It was found that life was incompatible with complete occlusion of the bile from the gastrointestinal tract; hence these patients were forced to drink their own bile as a part of the therapeutic measure. Winiwater first performed an anastomosis between the bowel and the gall bladder; thus for the first time affording a satisfactory not to say a more esthetic method of draining the bile into the intestinal tract when there is permanent occlusion of the common bile duct. Since that time the operation of cholecystenterostomy has been one of the standard surgical procedures for patients suffering from irreparable obstruction to the common duct.

The anastomosis which is most commonly used is between the gall bladder and the duodenum. In many cases, as Dr. Hancock has pointed out, this offers serious technical difficulties; hence a cholecystojejunostomy or a cholecystogastrostomy is the method of choice. Some men have raised the objection that it is undesirable to pour the alkaline bile into the acid medium of the stomach on the grounds that it interferes with the acid base control of the pyloric sphincter. This objection is wholly unwarranted in view of the fact that the bile is only faintly alkaline having about the same Ph as the blood. I think this operation produced one of the most gratifying results in all surgery from the standpoint of amelioration of symptoms.

J. Garland Sherrill: Dr. Hancock has reported an interesting case and the result obtained is very good so far as concerns the purpose for which the operative procedure was undertaken. Cancer of the head of the pancreas is a serious lesion, and the object here was to relieve the patient of the symptoms produced by cholemia. Probably the reason Dr. Hancock selected the stomach as the site of anastomosis was because of its accessibility. I think if he could have followed the suggestion made at the close of his report, i. e., doing a gastroenterostomy in addition to his other operation, he would have given the patient a very much longer lease on life.

An interesting feature of the report is the use of local anesthesia. The field of local anesthesia has been greatly increased during the last fifteen or twenty years. Gastroenterostomy and many other operations in the upper abdomen can be successfully performed under local anesthesia without serious inconvenience to the pa-

tient. Dr. Hancock is to be congratulated upon the fact that the operative procedure described was successfully concluded without a general anesthetic. Suture of the gall bladder to the stomach is not always easy of accomplishment. The wall of the gall bladder is thin and great care is necessary in suturing to prevent leakage. Another important factor is proper position of the anastomosis. If there is any strain on the suture line during respiration the sutures are likely to cut through the friable tissues and leakage will occur. It requires skill in manipulation of the opening, determination of the size of the opening, and in the technique of the operation to secure a good result.

J. Duffy Hancock (in closing): As to the use of local anesthesia in the case reported: We decided against a general anesthetic for two reasons, first the patient was already quite ill, and second he was an excellent subject for local anesthesia, cooperating with us very well. Fortunately we were able to complete the operative procedure under local anesthesia.

Gastroenterostomy was not performed because in our opinion the patient was in no condition to withstand the additional operation; moreover, there was no evidence that the duodenum was occluded and we believed there was nothing to be gained by gastroenterostomy. The man died from progression of the malignancy rather than from obstruction.

The itching which this patient had was terrific. He applied to the skin clinic at the hospital under the belief that he had the itch, and was willing to undergo any treatment that promised relief.

Anesthesia by Ephedrine, Epinephrine and Potassium Sulphate Mixture.—Read and Lin assert that a mixture of ephedrine with epinephrine and potassium sulphate can produce, by the wheal method, local anesthesia equal in intensity to that obtained by a mixture of similar proportions and strengths of procaine hydrochloride, epinephrine and potassium sulphate. The nature of this ephedrine anesthesia is not apparent, for simple solutions of this alkaloid do not produce wheal anesthesia. The synergism produced with epinephrine and potassium sulphate suggests a definite chemotherapeutic relationship between these three compounds. It is suggested that for dental surgery and ophthalmologic work, this mixture may prove of service.

A NEW CONCEPT OF THE MANAGEMENT OF CARBUNCLES.*

By A. DAVID WILLMOTH, Louisville.

A carbuncle is a circumscribed inflammation of the subcutaneous connective tissue down to the fascia, and involving the skin which is perforated in several places. The infecting organism usually is the staphylococcus pyogenes but may be the streptococcus or both. It differs from the ordinary furuncle in that it is more extensive and spends its force more deeply and profoundly. It is characterized by fibrinous exudate, multiple foci of necrosis, and the tissue adjacent to each necrotic plug becoming gangrenous.

The infection generally enters through a hair follicle or an abrasion, rare through the blood or lymphatics. A small superficial inflamed spot first appears, which soon spreads deeply and widely, producing an extensive indurated, perhaps boggy infiltration, more or less flat, elevated and circumscribed in shape and of a dusky red, purplish, or copper color. The area involved is often several inches in diameter, occupying for instance the entire posterior portion of the neck, extending possibly well into the scalp or downward on the skin of the back.

Small pustules soon appear upon the surface which break and reveal the mouths of openings which lead through the skin to the sloughing tissue beneath. These multiple openings are characteristic of a carbuncle and represent the paths of least resistance. The openings lead into the deeper structures along the columnæ adiposæ by way of which the pus reaches the surface.

Each fatty column contains a sweat gland. Products of infection in one of these columns trying to gain an outlet and not being able to escape to the sides, naturally go the way of least resistance, which is downward. Infection spreads as necrosis, breaking down to the sides of the column, opens interspaces, thereby allowing other fatty columns to become involved, the products finding their way to the surface through these until many openings are the result. Necrosis continually going on causes small openings to coalesce until many larger ones are present, each filled with pus and necrotic tissue until a honeycomb appearance is the result. The skin being more resistant produces the undetermined pathology found at the operating table.

Superficial necrosis occurs relatively early because the spreading deep phlegmon soon cuts off the blood supply to the fat, superficial fascia and skin. Thrombophlebitis is frequent and is one of the reasons why rapid

*Read before the Jefferson County Medical Society.

spreading takes place to surrounding structures. Again many of these patients are diabetic or nephritic and many also well up in years, factors which further contribute to the lowering of the patient's vital resistance.

The location of the infection further contributes to the high mortality. Especially is this true when the carbuncle is located on the lip, face or neck, as they commonly are, in which instance septic clots occur in the facial, jugular, or ophthalmic veins or in the cerebral sinuses. The mortality in these regions is about 50 per cent. So also is the danger great when the location is in a field richly supplied with lymphatics as around the shoulders, here abscesses in the lungs are not infrequent.

Marked constitutional symptoms are present from the start. In many cases one or more chills will occur during the twenty-four hour period, and septic fever is always present. Such marked symptoms, together with the indurated hard area surrounding the primary focus, with its purplish color, should enable us to make a diagnosis of carbuncle and not the more simple type of local infection known as boil or furuncle. If the patient is seen early, and close observations are made, delay will not so often take place in instituting active treatment. Here active treatment is the only hope for relief.

METHODS OF TREATMENT

Nowhere in surgery is delay fraught with more danger than in carbuncle. Patients should be under the constant observation of the physician and seen at least daily, and those showing early extensive tissue involvement and those with facial involvement should if possible be placed in a hospital at once.

If the constitutional symptoms are not alarming local and general treatment may be tried. If fever is high and frequent chills are present, with marked septic symptoms showing, no time should be lost in temporizing measures. The longer the delay the greater the necrotic area, the more septic the patient, the higher the mortality. Generally speaking the writer does not believe it is good surgery to wait to see if the condition will localize. It requires too long, and the results are far too uncertain to wait on vaccines, poultices, and topical applications. A carbuncle can seldom be aborted although injection of such agents as carbolic acid, are used into and around the infected area.

Should the patients be unwilling to have active treatment instituted, they and the family should be made to clearly understand the risk they are taking, and the more extensive destruction of tissues required to obtain relief should natural efforts fail.

They should also understand that condi-

tions may quickly arise that entirely preclude further efforts to save life. If these salient points are made clear to those interested little trouble is had in obtaining the consent for the surgeon to do as he thinks best. I am not unmindful that in a few, no amount of reasoning can persuade them to allow correct work to be undertaken. In these the use of such agents as vaccines, the water cooled ultra-violet lamp, hot antiseptic fomentations, which contain either a preparation of pepsin, or yeast to digest the slough, will hasten the removal of dead tissue to permit the field being kept clean. In these cases the use of sodium citrate in ten grain doses four times daily to liquify the secretion is very valuable.

Under the old plan of treatment by the cutting operation, which at best was not only bloody, but followed by severe shock and in many cases death, patients were not to be altogether blamed for taking the expectant plan of treatment. In many their chances were about as good as with any form of surgery.

Since most cases come to surgery in some form it is but fitting that attention be called to the various steps that have been made in attempting to best handle these dangerous cases. With a full realization that radical removal was seldom advisable, the old crucial incision with the swabbing with 95 per cent carbolic acid, followed with alcohol to counteract its destructive effects, was advised.

This did not meet with the success that was hoped for so the multiple incisions came into vogue. These secured some better results but were far short of satisfaction.

Following these came the use of the Paquelin cautery. A thing that was apparently going to revolutionize the results formerly obtained. To those familiar with the difficulties of the above instrument further remarks are unnecessary. It worked fine at the instrument house and by the time you had carried it to the hospital for some unexplainable reason it simply would not perform.

Then came the electric cautery, always workable, or nearly so, fairly constant in heat, and to all intents and purposes seemed a real success. After many months of trial, this too, had its many disadvantages. Rapid cooling when most needed, heavy and cumbersome and unweildly due to its being hot, and unhandy. It did, however, render far more service than anything we had prior to that time.

The writer having had extensive experience with the D'Arsonval bipolar current in the treatment of cancer cases, its use in the removal of carbuncles naturally suggested itself. The work could be done without anesthesia as a rule, save hyoscine, morphine and cactine, there was no cutting operation, hence

no bleeding to staunch, no shock, and a shorter stay in the hospital; the further advantage being that there were no hot cauteries to handle or to become cool while in use, the heat being continuous, and the destruction of tissue being always under the control of the operator at all times. Any amount of tissue destruction can be had, depending on the amount of current used and the length of time of its application.

When it is definitely determined that a carbuncle is present, that is the proper time to institute radical measures for its immediate relief. Like acute appendicitis the time to operate is when the patient is first seen, as the work will be less then and the patient's chances better than at any later period.

The technique is as follows: select the D'Arsonval terminals of the high frequency machine, because the voltage is low and the milliamperes high. If choice can be had, use a machine that does not oscillate more than a million times or less per second. Assuming that for some reason or reasons, the patient should not or will not take either a local or general anesthetic, and the amount of tissue is not too great, the area involved can be anesthetized by using the same type of current as will be used in operating.

Attach the dispersing electrode (so-called indifferent) of the machine to any part of the patient's body that is most convenient; or, what is a very good method, use the autocondensation handle and attach the indifferent cord of the machine to this, and tell the patient to grasp it with both hands not so tightly as to cramp the hands, but firmly. This will give the patient something to do with his hands and prevent his taking hold of you, and is an easy way to make the desired connection.

To the other cord of the machine is attached the handle of the active electrode which is to be used with the needle point in destroying the pathology. Start with a very light current—just enough to make the so-called "feather spark"—allowing this to come in contact with the skin about one-fourth inch or a little more from the margin of the area to be destroyed.

By passing this in a circular manner around the carbuncle for three to five minutes and having your assistant gradually increasing the spark to the point of tolerance, and at the same time increasing the speed of the revolutions, the entire area will be numbed, and without telling the patient, the needle is pushed into the infected tissue as deep as is necessary to reach the deepest points of infection and allowing it to remain there, increasing the current if needed until the tissue is blanched white. The amount of current needed will

usually be about 250 to 500 milliamperes at the time 20 to 30 seconds.

When the tissue becomes white the needle is removed and inserted into another adjoining area and the current applied with the foot switch until the tissue is again blanched. By repeating this procedure, the entire pathology can, in a few minutes, be entirely destroyed and only healthy tissue remain.

When all infected tissue is coagulated, the major portion can be removed at once with a large spoon curette, leaving only a healthy base. Any bleeding points are controlled by allowing the current to arc for one-half inch spark distance when all bleeding will instantly stop. The wound is now clean and ready to be dressed with plain sterile gauze. Pain will not be experienced after the treatment is over, for the reason that small terminal nerve endings are obtunded by the current.

If much destruction is going to be needed, the patient should be in a hospital, and given a full strength hyoscine morphine, cactine tablet two and a half hours before the expected time of the operation.

This should be further augmented by the half strength tablet of the same, one half hour preceding the operation. The patient usually comes to the operating table either in profound sleep, or if not, in that state of "Twilight Sleep" where he can converse with you, while experiencing no pain, not remembering anything that happened at the time. Where ether anesthesia is used, great care must be exercised to prevent explosion by getting the ether can at safe distance before the treatment is begun. It is not good practice to assume your ability to absolutely prevent arcing and start while the ether is being used, or the can nearby.

If the operation is about the face or neck, time must also be allowed to get the ether vapor out of the patient's lungs and as a further precaution, lay a wet towel or gauze over the patient's face during the time the current is on. The operator can control any of these dangers, if experienced in the use of the current, by not allowing any sparking to occur on the surface. This is done by keeping the needle in the tissue during the entire time the current is on, and by keeping the needle clean and free from any charred accumulations at the tip that is exposed for the first inch or two for contact. No sparking can occur from the portion of the needle that is covered with rubber tubing and away from the tissue.

Those cases being more extensive will require from 750 to 1250 milliamperes of current to work fast and avoid any hemorrhage, and should have the dispersing electrode applied to some portion of the body, either the

thigh, back, or abdomen. This indifferent electrode should be of block tin, 6 by 8 inches in dimensions, and must always have round corners.

It should be kept in direct contact with the skin and should be thoroughly soaped or applied over a towel of several thicknesses which has been thoroughly wet with normal saline solution to make a perfect contact, and must be maintained in direct contact either by an assistant holding it in contact with the skin, or a bandage applied over it, or sand bags laid on to hold it close to the surface. One layer of spongiopiline may also be used between the tin and the body surface. Unless perfect contact is maintained at all times a severe burn will be produced by the current arcing across from the tin plate to the patient's body when the current is on.

The operator should always use a foot switch so that he may be in perfect control of the current at all times. This insures instant application and likewise instant breaking of the contact when necessary. The machine should be grounded to a cold water pipe to take care of any stray currents. Remember you are using a current of potential danger both in voltage and milliamperage.

Start with the coagulation around the edges far enough away to be in fairly healthy tissue, which can be determined by the resistance of the structures to the entrance of the needle. Make a zone entirely around the carbuncle first, then go over all the area involved and deep enough to destroy the dead structures. Then remove the excess as before with a large spoon curette, and if any droplets of pus make their appearance while curetting, again use the needle to coagulate deeper until healthy tissue is reached. Do not get too radical and destroy healthy structures.

The wound is dressed with dry dressing of gauze and the patient placed in bed.

If the slough, that is going to occur, produces much odor, this can easily be cared for by the application of powdered sugar to the wound. The sugar should be moistened enough to form a paste and spread on gauze large enough to cover all the wound. The paste should be thick enough to make a smooth dressing when applied, and placed in direct contact with the wound. This dressing can be used exclusively if desired, or an oil dressing substituted when the wound has become perfectly clean and free from odor. The separation of the slough can be hastened by the use of pepsin which will digest all tissue destroyed by the current, leaving a clean granulating wound.

The electrocoagulation of these conditions is not only more rapid but much safer than

surgical removal, there being no bleeding to annoy or cause shock. It seals all lymphatics, thereby preventing any further danger from metastasis, is painless after the work is done, has no mortality from shock of operation and leaves a smaller and more pliable scar. The scar can further be lessened and the healing process made more rapid, by the use of the water cooled ultra violet lamp, one to two minutes each day, with open lamp at six inches distance. The use of peroxide to cleanse the wound will not only favor the cleansing process, but will act as a photosensitive agent enhancing the therapeutic action of the lamp.

A word of caution should be given in those cases where local anesthesia is used. Remember tissues infiltrated with fluid generate heat much more rapidly than normal tissues. At least one third less current should be used, or else by the generation of steam a much wider destruction of tissue will occur than was intended.

Electrocoagulation in carbuncles so far surpasses the old treatment of knife or cautery as to make them obsolete.

DISCUSSIONS

Leon L. Solomon: Will Dr. Willmoth tell us whether he used the well known Hyoscin-Morphine-Cactus tablet in the two cases referred to, one of the patients being an individual of advanced age? My reason for asking this question is because of the unfortunate experiences I have known with this unusual combination of drugs.

I desire to go on record with the statement I know of no analgesic more dangerous than the so-called Hyoscin-Morphine-Cactus tablet. In this combination, the pharmacist has developed a composite property wholly different from that of any one of its three ingredients. No physician ever observed from Hyoscin any of the effects which H. M. C. produces; likewise, the influence of morphine in no wise resembles the effects produced by Hyoscin-Morphine-Cactus and the action of cactus in H. M. C. is as different as daylight from darkness.

Except to experiment with the product when it was first brought to professional attention, I have never used a single dose of H. M. C. My experience with it however has been rather large. On a number of occasions, I have been asked to see patients to whom the drug has been administered, with effects so unpleasant as to make me extremely fearful of it.

I was not aware that the combination was in common use today. I look upon the agent as especially contraindicated in the aged. Knowing Dr. Willmoth's extreme care in matters of this kind, I am therefore anxious to know whether in the two cases mentioned, H. M. C. was employed.

M. Casper: I have often heard of "bread-and-butter-surgery," but Dr. Willmoth's report seems to deal with "sugar-and-butter-surgery." Personally I use the electrocoagulation method in treating carbuncles, but not exactly according to the technique described by Dr. Willmoth. I believe he has given us something that is practical and safe in the treatment of these serious affections. The only thing I wish to criticize is the use of the H. M. C. tablet. I believe this combination to be equally dangerous, or perhaps more so, in these cases than in other types of pathology, and if we have relegated it in other cases as a dangerous agent, I think we should also do so in carbuncles.

Instead of using the needle as described by Dr. Willmoth, I employ a so-called button about the size of the carbuncle itself. This button is shaped something like a mushroom. This is applied to the surface and the entire area is burned at the same time after which practically the whole carbuncle can be removed in one mass. I have never seen any bad results in these cases. The patients get along better and recover more quickly than under the older methods of treatment.

Dr. Willmoth has given us some very practical and valuable points in his report and I wish to thank him for it.

A. David Willmoth (in closing): Dr. Casper referred to use of the disc in the electrocoagulation method of treating carbuncles. I, too, use the disc in certain cases, that is in small lesions about the face and throat. One trouble about the disc is that it works too slowly. The current is dispersed over too large an area. With a pad 6 by 8 inches on the abdomen and a disc 3 or 4 inches in diameter, one would be unable to apply a sufficiently strong current long enough to be effective in destroying the carbuncle without burning the abdomen.

I employ the needle method because it is much simpler. An aluminum needle is used with a small rubber tube over it leaving as much of the tip exposed as required for introduction into the tissues, and about an inch of the upper end is left exposed to attach the handle. The needle is easily inserted and one can familiarize himself with the depth of the diseased tissue by introduction of the needle. The work is completed much more rapidly with the needle, and I am sure I can convince Dr. Casper that the needle is far superior to the disc. I use the disc only in small lesions. The disc is slower in action, it does not work nearly so well as the needle, there is no penetration and one cannot determine the depth to which the burn extends. I can familiarize myself with the amount of current and the length of time required to destroy the diseased tissue, and also accurately determine the depth to which the burn extends with the needle. These features cannot be well as-

certained with the disc.

As to the use of hyoscine, morphine and cactine: I have employed the H. M. C. tablet in surgical cases in both young and old people and have never yet had the slightest difficulty following the administration of it. I have seen patients thoroughly narcotized by this combination without any slowing of the respiration whatsoever. I have performed many operations under this form of analgesia, including herniotomies, the removal of cancerous growth, etc., and have never had the slightest trouble. The danger of using ether in the operating room where cautery is to be employed is not to be regarded lightly. In Chicago two months ago I heard a surgeon report two cases in which there was an explosion of ether in the lung where the cautery was being used. In the first case ether had been removed from the patient, a few moments breathing had been allowed, and it was thought all the ether was out of the lung. However, an explosion occurred and the patient died instantly. In the second case an explosion occurred in the mouth and lung following the use of cautery for the removal of a cancerous growth of the face. The patient was removed from the table and placed in bed, but expired a few minutes afterward. These two cases occurred in a large hospital and were reported by one of the most prominent surgeons of the middle west. The danger of ether must be given due consideration, and in cases where the cautery or electrocoagulation needle is to be used I would much prefer not to have an ether can too near the patient. Wherever possible it would seem advisable to avoid the use of ether entirely where cautery or electrocoagulation is to be employed.

Many of the smaller carbuncles can be treated according to the method I have described without the use of anesthesia. Even extremely nervous people can be thus treated after the administration of a small dose of hyoscine, morphine and cactine, or straight morphine if that be preferred, two and a half hours prior to the operation, this to be augmented by another dose half an hour before the procedure is started. Local anesthesia may be employed if the conditions demand it. However, if local anesthesia is used one must be extremely careful in his technique. Where the tissues are infiltrated with fluid the destruction will be much greater and wider than would occur otherwise. For this reason only about half as much current should be used in those cases where local anesthesia is employed. For example, if 1000 milliamperes would destroy the diseased tissue under H. M. C. or a general anesthetic, only 500 milliamperes should be used under local anesthesia. If this precaution be not observed there may be extensive destruction of healthy tissue, which, of course, is not desired.

RENAL TUBERCULOSIS: CASE REPORT.*

By LOUIS FRANK, M. D., F. A. C. S.,
Louisville.

Renal tuberculosis arises from a focus of infection often impossible of demonstration, though always present, and as a rule reaches the kidney by way of the blood stream probably as an embolus. Blood stream infection with the tubercle bacillus may sometimes occur, but in such instances we have a general diffuse renal infection in the presence of a general miliary tuberculosis, just as we would in the case of a blood stream infection (a septicemia) with any other pathogenic organism. Also we cannot deny that at times we may have an ascending lymphatic infection with the tubercle bacillus just as we may with other organisms. That we ever have ascending infections by way of the ureter, however, is very very doubtful, and our own experiments conducted upon dogs with pus-producing organisms impels us to the expression of opinion that, in the absence of pre-existing pathology, such never occurs.

The organisms usually locate in the case of tuberculous infection in the region of the loops of Henle where the circulation is slowest. This is near the base of the pyramids, and in that region they may remain localized for years exciting typical tuberculous processes which may proceed to caseation and to calcification. On the other hand, the process may extend rapidly involving the entire organ more or less. Most frequently the process extends toward the pelvis of the kidney giving rise to tuberculous pyelonephritis with its attendant pathological processes in ureter and bladder. In the tendency to spread toward the renal pelvis the process, as has been shown by Cabot and Crabtree, is not unlike that occurring in the presence of infection with the colon and typhoid group which show the same predilection and tendency to the production of pyelitis, pyelonephritis and nephrosis. These are unlike the infections due to the pus-producing organisms or cocci, which become primarily located near the cortex of the kidney in the glomeruli and convoluted tubules extending toward the periphery and manifested as infarcts or as diffuse suppurative processes of the cortex, or should they break through the capsule, as peri-renal abscesses.

It is typical of the tubercle bacillus to involve the calyces, thus giving rise to the enlarged irregular "tips" shown in pyelograms. If the process has gone on to caseation and calcification, the x-ray plate would

show these shadows which may be mistaken for calculi but are less dense and have a spotted or irregularly dense appearance, and which when present are absolutely diagnostic. If the abscess is draining into the renal pelvis the pyelograms alone are made, the fluid may find its way into the cavity and then obscure the calcified areas; hence all pyelograms should be preceded by an exposure before making the injection. At times tuberculous process may become completely shut off, lying dormant for years, or as a result of auto-nephrectomy the entire kidney may become excluded. Such exclusion is, however not curative and it has been shown that these kidneys are a constant menace, the activity of the process being always susceptible of a recrudescence. In the case to be reported there was a beginning effort of such exclusion present, as evidenced by the obstruction of the ureter. We have seen two cases of complete exclusion in a rather large series of cases.

Bladder changes are present in all cases after clinical evidence manifests itself; in fact, it is the symptoms due to the bladder involvement which brings the patient to notice. The pathological changes in the bladder vary from a catarrhal condition to true ulceration. Unless true tubercles are present the vesical manifestations rapidly disappear after removal of the nidus of bacteria, and even the secondary tuberculous ulcers tend to heal kindly under appropriate treatment once the kidney with possibly an infected ureter have been extirpated.

The symptomatology is evident from the above brief discussion of the various pathological processes which may be found. To briefly review these, and to bear in mind that early diagnosis is desirable, might not be amiss. Frequency of urination accompanied by polyuria and nocturia will be in all likelihood the earliest evidence of something wrong. Such evidence leads to urine examinations which will probably show pus in an acid urine. If later dysuria with urgency follows, the evidence becomes stronger. If bleeding occurs the case may be looked upon as strongly suspicious. At this time we should be able to find tubercle bacilli in the urine. Often repeated examinations must be made, using the 24 hour urine, maybe treating with formalin, before discovering the organisms. I have at times found only a very few bacilli in one slide, yet confirmed the diagnosis at operation. Care must, however, be exercised to exclude the smegma bacillus which is also "acid fast." At this early time we may have, as we have shown, an increase of phenolphthalein output from the affected kidney. Cystoscopy may now reveal

*Read before the Jefferson County Medical Society.

a little increased redness about the ureteral orifice and a slight "spotty" redness only over the trigone.

Later in the progress of the disease we have much pus in the urine, evidence of a severe cystitis, lessening of bladder capacity, maybe dribbling, with cystoscopically typical evidence in the bladder wall of the secondary infection. There may be pain in the loin, fever with evening exacerbations, and if mixed infection has supervened, all the evidence of a sepsis of severe grade.

Pyelograms after the early stage may show the typical appearance of erosions with irregularity and enlargement of the calyces. Attention is again called to this typical appearance by Young in his Text Book on Urology which is just from the press.

Before citing our case I would again like to call attention to the difficulty of demonstrating the tubercle bacillus at times. The case may be clarified in such instances by guinea-pig inoculation which, after all, is the most delicate of all diagnostic tests in doubtful cases.

CASE REPORT.

Mrs. K., white, aged twenty-six years, married five years, mother of one child now two and a half years old, no abortions. Menstruation regular and normal. Chief complaint when she applied to us, December 8th, 1925, abnormally frequent urination. Family history of no importance. Patient had measles and varicella when a child. Attacks of tonsillitis frequent until four years ago when her tonsils were removed. Pneumonia nine months ago, no complications.

Four or five years ago the patient began having pain in the lumbar region; this continued until the time her tonsils were removed four years ago. Since then there has been no pain in back or abdomen. For the past fourteen months she has had frequency of urination, quite marked at times, and also considerable pain during and after micturition. Recently pain not so severe. No blood observed by her in the urine, and no pain along course of the ureter. Fecal evacuations regular; no gastrointestinal, cardiac or pulmonary symptoms. No loss in weight. Heart, thyroid, etc., negative.

Urinalysis, December 9th.: color straw, cloudy; reaction acid; specific gravity 1010; blood + + +; albumin + +; pus + + + +. A catheterized specimen of the urine was used in making the examination.

Recognizing the importance of making a thorough cystoscopic investigation and catheterization of the ureters the patient was sent to the hospital for observation and study. The first cystoscopic examination was made, in my absence from the city, by Dr. L. Wallace

Frank. At that time no urine could be obtained from the left kidney, which was the one apparently diseased, because the left ureteral orifice was considerably congested and edematous. I have frequently noticed in cases of tuberculosis kidney that the ureter of the affected side was elevated from the surface of the vesical wall ("pouched out") making introduction of the catheter difficult. In this case there was apparently some obstruction of the ureteral lumen itself, but after introduction of a filiform catheter we were able to dilate the ureter sufficiently to later pass a No. 5 catheter without difficulty. This catheter was the one used when the pyelogram exhibited was made.

The urine from the left kidney showed no tubercle bacilli although we examined it repeatedly. We were unable to find the organism even after centrifugalizing the urine and repeated examinations. Despite this, however, several guinea-pigs were inoculated and kept under observation. Based upon the local appearance, the history and the repeated urinalyses, which always showed an abundance of pus and some blood, we made the clinical diagnosis of tuberculosis of the left kidney. Another pyelogram was made January 28th, 1926, which is also exhibited. Roentgen-ray examination with the catheter in situ showed the left kidney very much enlarged. The following report of the examination may be interesting:

The left kidney injected. It is in proper position but larger than normal with catheter extending to the pelvis. The cortex is greatly thinned; the pelvis is somewhat dilated; and the calyces larger than normal extending nearly to the periphery in some places. No calculi were seen.

After the catheter is withdrawn, a plate shows the ureter somewhat dilated just below the pelvis. There seems to be a stricture about one and a half inches below the pelvis. Radiographic diagnosis: pyelonephrosis.

At this time we had not received report on the guineapig inoculation, but as we believed from the appearance of the calyces, from the history and cystoscopic appearance of the vesical interior that the kidney was tuberculous, it was accordingly removed.

Operation report: February 9th, 1926: Six inch incision in left loin; kidney fossa opened exposing a large, adherent, abscessed kidney; ureter elongated and walls thickened; ureter and blood vessels ligated; left kidney with two and a half inches of ureter removed. Wound closed in layers; one cigarette drain in kidney fossa.

The specimen was submitted to Dr. Stuart Graves for pathological examination and the following is his report: Gross description:

Specimen consists of incised kidney weighing 185 grams. Surface is covered with fibrous and fatty tissue. Diameter 115x60x40 mm. Surfaces are roughened. Cut surface reveals many necrotic areas varying from one to 40 mm. in their greatest diameter. These are filled with a caseous material. All normal kidney markings are lost. Portion of ureter 30x12 mm.

Microscopic description: Little normal kidney structure left in sections studied. There are extensive areas in cortex and pyramidal portions both of which show complete necrosis. These vary greatly in size and for the most part show little fibroblastic proliferation about peripheries, but are bordered with zones of endothelial leucocytes and lymphocytes with unusually large numbers of polymorphonuclears. In periphery of one of these larger zones are two foreign body giant cells. There are some smaller areas with central necrosis, about which there is more fibroblastic proliferation and leucocytic reaction as characterized by presence of several typical foreign body giant cells. Outside of the immediate areas of necrosis and cellular reaction, most of the kidney is densely infiltrated with lymphocytes and plasma cells and some endothelials. Microscopical diagnosis: tuberculosis.

The day after receiving the foregoing information from Dr. Graves, the following report was made from autopsy sections on guineapig injected with urine from the patient:

Lungs: Some congestion, otherwise not remarkable. Lymph nodes from groin: Largely destroyed with extensive areas of necrosis with intense leucocytic reaction, chiefly polymorphonuclears, giving first impression of acute abscess. In spots about periphery of these abscesses, however, endothelial leucocytes predominate and there is some tendency to fibroblastic proliferation, suggesting attempt to "wall off." About periphery also is a tendency for smaller focal areas of necrosis, as if the destructive process were spreading unevenly. There are even discrete, small, focal areas of necrosis just outlying about which the endothelial and fibroblastic reaction is more distinct, and in periphery of two of such focal areas is one small foreign body giant cell each. Microscopical diagnosis: Congestion of lungs; subacute lymphnoditis, probably tuberculosis. The later microscopical diagnosis was tuberculosis.

In making the pyelograms which are exhibited we injected 15 cc. of sodium iodide. The kidney was removed without any difficulty together with a large portion of the ureter. The ureter was tremendously thickened, the lumen being very small, about the size of a

No. 5 ureteral catheter. The wall of the ureter in its transverse diameter was probably five-eighths of an inch in thickness. Removal of the lower portion of the ureter was accomplished with some difficulty, because infection had extended through its walls and it was adherent to everything adjacent including the posterior abdominal wall. After removal, the ureteral stump was cauterized and allowed to recede into the cavity. Drainage with rubber drain was used for forty-eight hours, not because we feared infection, but as we know after nephrectomy there is sometimes slight oozing of blood and it is well to get rid of this rather than take the chance of infection later. The drain was removed after forty-eight hours, followed by primary union throughout the incision.

The woman was in the office about two weeks ago. Her vesical symptoms entirely disappeared shortly after the operation and she is now perfectly well. The only after treatment was vesical irrigation with boric acid solution on three or four occasions. She had no elevation of temperature after the operation and her convalescence was smooth and uninterrupted.

We are of the opinion that it is best not to practice drainage after nephrectomy for tuberculous kidney, although good results have been secured in many instances with drainage. The reason for introducing a drain into the kidney fossa in this particular case was to take care of any oozing that might have occurred.

DISCUSSIONS

John R. Wathen: Dr. Frank has made a most excellent report upon a subject which is of considerable interest. Attention was called to the importance of renal tuberculosis in 1906 in Baltimore. Prior to that time Dr. Howard Kelly had performed fifty nephrectomies for tuberculosis but his report had not attracted the attention it deserved.

Dr. Frank has discussed several interesting points some of which I would like to further emphasize. One is the question of early diagnosis. I believe if we will make an early diagnosis of renal tuberculosis and perform nephrectomy promptly, we will do a great deal toward saving the lives of these unfortunate patients. If we wait in every instance until guineapig inoculation shows tuberculosis, I think we are not only losing valuable time, but in some cases we may be misled. I am inclined to believe we have progressed far enough in our knowledge of roentgen-ray technique and other modern methods to make a diagnosis of renal tuberculosis independent of the actual demonstration afforded by guineapig inoculation. However, I have not always entertained this idea, in former years I waited for the result of guineapig inoculation,

but now I think in most cases it would be a mistake to do so.

In this part of the country, I am sorry to say, there is still a tendency on part of the general practitioner to treat these cases medically for some time, thus not only delaying the diagnosis but also preventing prompt nephrectomy. Late operations in renal tuberculosis are not usually productive of satisfactory results. Nephrectomy must be performed early, as soon as the diagnosis can be made, if we expect to accomplish the greatest good to the largest number of patients. Spontaneous recovery from renal tuberculosis is very rare. The foci of infection which follows the kidney involvement in tuberculosis may be rather widespread. In the large clinics throughout the country it is claimed that following urological tuberculosis the lungs become involved in from five to ten per cent, and that even after nephrectomy has been performed the patients die of pulmonary tuberculosis. Statistics from the Mayo Clinic show that the most of these patients improve wonderfully after nephrectomy. Personally I have operated upon eleven or twelve patients for tuberculous kidney and only two of these individuals died. In patients with renal tuberculosis not submitted to nephrectomy we know the mortality is very great. Five or six of the patients upon whom nephrectomy was performed are living after more than five years. I therefore feel that this is about as good a percentage as we are able to obtain.

We must differentiate between immediate and remote mortality in these cases. I believe permanent cure in the majority of clinics has been estimated at about sixty per cent. It is probable this represents about the average.

As regards vesical symptoms, which I think are most important in calling our attention to renal tuberculosis: Lower, of Cleveland, states that vesical symptoms will subside after nephrectomy in about the same length of time they existed before nephrectomy was performed. I think that is a fair statement, but there are as a matter of course, many exceptions.

As to treatment of the ureter: This has always been an important feature in the operation, and in my opinion it is none the less so even today. If a long incision is made the ureter can be brought upward into the lower angle of the wound and at least three to four inches removed. Before allowing the ureteral stump to recede into the cavity it may be cauterized or injected with carbolic acid according to the preference of the operator. I have always used the carbolic acid method and have never seen the ureteral stump give any trouble.

I have made it a practice to drain for twenty-four to forty-eight hours after nephrectomy for tuberculous kidney, as Dr. Frank has stated.

In my opinion drainage is advisable in every case where the kidney is removed for tuberculosis, although this is not in accord with the views of certain other surgeons. It is claimed by some observers that the moment the cause of the tuberculosis above, that is the kidney, is removed, the ureter and bladder below will recover of themselves within a short time in the majority of cases.

Dr. Frank has presented the most interesting roentgenograms of the kidney that I have ever seen.

J. Garland Sherrill: In 1901 I delivered the oration before the American Medical Association on the subject of Renal Tuberculosis. It was so far away from home, however, that its reverberations did not reach this far. My paper was read in Portland, Oregon. The studies of the subject which I made at that time were to me rather interesting.

I was called at one time to see a young man who was supposed to have so-called renal colic; he had been having rather severe attacks of pain which sometimes appear in these cases. He was in the flowering period of life, between twenty and thirty, the correct diagnosis was made of tuberculosis of the kidney and not renal calculus.

My experience does not agree with some of the other speakers: I believe the general practitioner sends the patient early to the surgeon—or at the present time to the urologist,—just as soon as there is sufficient blood in the urine to attract his attention. Other symptoms are frequency of urination, especially at night. Young women who have slight vesical pain, dysuria, and a small amount of blood and pus in the urine, apply to the general practitioner for advice, and I think as a rule such patients are immediately referred to the surgeon. Careful examination at that time by modern methods of procedure will usually establish renal tuberculosis in the early stage.

In about ninety per cent of early cases renal tuberculosis is unilateral; in late cases it is always bilateral. If this is a blood stream infection, how can one explain why there is not bilateral renal involvement in the beginning?? I am of the opinion that tuberculosis of the kidney is rarely ever a blood stream infection. It may be true that bacteria are carried in the blood cells, but when there is no obstruction either in the kidney pelvis, the ureter or the bladder—or in the male prostate—the patient does not tend to develop tuberculosis of the kidney. The kidney has a great resistance to bacteria in the urine so long as there is no obstruction to the urinary stream. Many varieties of bacteria may be excreted with the urine without the kidney becoming infected. It is only in the presence of obstruction with urinary stasis that the kidney becomes infected. I believe tuberculosis of

the kidney occurs through the urine, occasionally though rarely from ascending infection, never through the lymphatics.

In every case of tuberculous kidney the ureter will be found markedly thickened. If the patient has no other lesion than can be demonstrated, that patient can be cured of renal tuberculosis in the larger number of cases by nephrectomy. In bilateral cases one kidney is almost as badly crippled as the other, and it is probably better in such cases to let the patient go along under medical treatment for tuberculosis. I have seen several patients of this kind improve wonderfully under proper treatment and they lived for a long time. Where one kidney is very much worse than the other, I believe it would be best to remove the kidney with greatest involvement. I once performed unilateral nephrectomy upon a young man who was supposed to have pulmonary tuberculosis and had been living out doors. The diagnosis was made clinically and operation performed without waiting for either the tuberculin or guinea-pig test. One kidney consisted of a large caseous tuberculous abscess; this kidney was removed. That man continued to live out doors and was alive many years after the operation. We can accomplish much for these patients, as Dr. Frank has said, if we see them early and operate promptly.

I would like to know how much reaction occurred from injecting the pelvis of the tuberculous kidney in the case reported. I believe that as a rule it is bad practice to inject the pelvis of a tuberculous kidney. Neither do I believe we ought to examine one kidney without including the other.

The vesical symptoms usually subside promptly after removal of a tuberculous kidney provided the opposite kidney is not badly infected.

If a drug is to be used in treatment of the ureteral stump, there is nothing better than carbolic acid. The actual cautery is efficacious.

Stephen C. McCoy: Dr. Frank has given us a most interesting and instructive paper. I was glad to hear him mention the diagnostic importance of careful cystoscopic examination in renal tuberculosis. With the modern methods and instruments of precision at our disposal, including cystoscopy, microscopic examination of urine obtained by ureteral catheterization, pyelography and roentgenoscopy, the diagnosis of tuberculous kidney can be made in practically every instance without the necessity of waiting for the result of guinea-pig inoculation.

In all the cases of tuberculous kidney I have seen there has been more or less involvement of the ureter. As stated by Dr. Frank, the vesico-ureteral orifice is usually edematous and obstruction often exists higher in the ureteral lumen. It is sometimes difficult to inject the diseased side for the purpose of making a pyelo-

gram; but this should be done wherever possible. I have never seen any unpleasant results from the procedure. The appearance of the calyces is usually characteristic of tubercular infection and the amount of kidney destruction can also be determined.

Vesical disturbances are ordinarily the earliest manifestations of renal tuberculosis, and every patient complaining of urinary frequency, vesical irritation, etc., should be examined cystoscopically to determine the cause.

After nephrectomy for tuberculous kidney, I believe the safest plan is to practice tube drainage for twenty-four to forty-eight hours, for the reasons stated by Dr. Frank.

Louis Frank (in closing): The patient whose case was reported was operated upon at the Baptist Hospital. Several tests for renal function were made with sulphophenolphthalein. At the first test the output from the left (diseased) kidney was so slight that it could not be read on the coloremeter, and the function of the right kidney was considerably below normal. As shown in the record, the patient was kept in the hospital under treatment for some time until the output from the right kidney approached the normal standard. After the functional test showed a greatly improved output further catheterization of the kidneys was not performed, we simply tested the twenty-four hour urine and measured the output from time to time. The quantity of urine increased and the patient's condition improved to such an extent that nephrectomy was performed without making further separate kidney tests.

I have the greatest respect for Dr. Sherrill's opinions, but must disagree with him on several material points: It is the opinion of everyone who has studied this subject that ascending infection of the kidney is infrequent. Ascending infection may occur through the ureteral lymphatics. This has been proven both clinically and pathologically.

I do not believe there is any danger in catheterizing the tuberculous kidney. I have been doing this ever since I began the use of the ureteral catheter, which has been quite a number of years, and have never seen any bad effects. My first experience was with the Kelly open cystoscope for use in women. In the case reported we used an ordinary Buerger cystoscope and had no difficulty in introducing the catheter into the right ureteral orifice, but, as stated in my report, some difficulty was at first encountered in entering the left ureter.

I have always made it a rule to test the function of both kidneys separately to determine whether the good kidney has sufficient functional capacity to maintain life before suggesting removal of the diseased organ. How this information can be obtained without catheterizing both kidneys I do not know. We have always

tested both kidneys, even before the phthalein test was introduced, to ascertain the output from each and also to determine whether the patient actually had two kidneys, before considering the question of nephrectomy. In not a single instance of this kind have I seen infection occur in the other kidney. So far as I am personally concerned I would not hesitate to introduce a catheter into a healthy renal pelvis even if I were certain the bladder urine contained tubercle bacilli. I have repeatedly injected the ureters of animals with pus-producing organisms and no infection of the kidney followed. Some years ago I performed a great many experiments on dogs, bringing the ureters out of the body and injecting them with virulent organisms but never produced any trouble in a normal kidney. Infection does not occur so long as the kidney is not damaged. If the kidney, however, be traumatized by squeezing or otherwise before the injection was made then infection promptly occurred.

Dr. Sherrill misunderstood me in one particular: Tubercle bacilli do not multiply in the blood stream, they are carried in clumps or masses from the original site of infection to the kidney and there become localized, first as a rule in the Henle loops and the infection then may spread to the entire kidney. Of course in rare cases we do have general miliary tuberculosis of the kidney, and here the tubercle bacilli are carried through the blood stream and deposited in the kidney just as in any other structure of the body.

My experience agrees with that of Dr. Sherrill in this respect, that usually tuberculosis is confined originally to one kidney. If the other kidney becomes involved it is at a much later date. The second kidney may never become involved, and it is especially unlikely to do so if the diseased kidney is promptly removed.

I feel gratified at the result obtained in the case reported. In the greater majority of instances in which I have removed one kidney early for tuberculosis, the patients are still living.

It is surprising how quickly the vesical symptoms disappear after the removal of a tuberculous kidney. I think the tuberculous process in the bladder and in the ureter is not exactly the same, because in the ureter we may have ulceration which progresses to such extent that obstruction with occlusion occurs and the kidney becomes shut off, this being what we term auto-nephrectomy, that is the patient isolates his own kidney. Also when as a result of ureteral obstruction the pressure inside the kidney equals the blood pressure, the circulation in the kidney ceases and the kidney no longer functions.

I saw a woman who had lived for twenty years without symptoms but with a previous typical

history of tuberculous kidney. She then began having intense pain and fever, probably due to distension of the renal capsule, and a palpable tumor was present in the loin. Cystoscopy showed where the ureteral orifice should be there was merely a slight projection of the vesical mucosa. No opening could be found. The kidney of the affected side was functionless, the opposite kidney was functioning normally. The affected kidney must have been out of commission for twenty years. We have also encountered similar conditions in other cases, but in this particular one we believe the woman had had extensive ulceration of the ureter with occlusion which had isolated the kidney.

Why we could not find tubercle bacilli in the urine in the case reported I do not know. At the pathological examination areas that emptied into the pelvis were filled with tubercle bacilli. I have seen cases of renal tuberculosis, however, where the urine was teeming with tubercle bacilli, yet when the kidney was removed there was less gross evidence of disease than in the present case.

As to treatment of the ureter after nephrectomy: The ureter is probably always more or less involved in the tuberculous process as shown by the edema, enlargement and often obstruction. The ureter is usually adherent, but by the exercise of care the adhesions can be separated and several inches of the diseased ureter removed. I have made it a practice to cauterize the stump before allowing it to recede into the cavity. I have sometimes injected iodine and carbolic acid followed by alcohol into the ureter, but as a rule I do not like to do this. The process in the ureter will subside in the majority of cases without any further attention.

While there is some question about this, I think occasionally the tuberculous process in the bladder represents an ascending infection from the lower, genital tract. We know that in the male the prostate, seminal vesicles, etc., are often found tuberculous. When the testicles are involved the process may extend to the kidney through the lymphatics.

Diabetes in Child Treated with Insulin.—Miyake had under his care for one year a boy, aged 8 years and 11 months, who suffered from diabetes. Repeated injections of insulin had a most salutary effect. Small doses at long intervals are suggested as being preferable to large doses at short intervals.

DIABETES IN THREE YEAR OLD CHILD.*

By T. COOK SMITH, Louisville.

This patient is exhibited before the society tonight because he presents several points of special interest, namely: the patient is colored, he is very young, he presented a very peculiar reaction to ultraviolet light, he recovered from beginning gangrene, he is doing well living at home, with diet and insulin being managed by his colored mother. Case report follows:

Robert Campbell, aged 3 years, colored, was admitted to the Pediatric ward of the Louisville City Hospital on September 15, 1925. This patient was sent in with a diagnosis of diabetes mellitus by Dr. Arthur O. Goodman.

The mother's complaint was that "the baby passed water too frequently, that he was getting sleepy, that he was losing weight very rapidly."

In the family history diabetes was not discovered among the immediate or distant relatives. The patient has only one sister, aged 11 months, and no brothers. The mother's Wassermann test was negative. This family is perhaps slightly above the average colored family in intelligence.

The personal history of the baby contains no abnormalities. He was born August 5, 1922, by normal delivery. He was breast fed for seven months and at that time his diet was supplemented by cow's milk, cereals, and occasional sips from the family dishes. He walked at eleven months and apparently had been of about the normal weight and development for age. His mother never considered him a heavy eater and states that "his appetite was a bit peculiar."

Present illness began toward the end of August, 1925, when the patient fell and bruised his chin. The injury did not seem severe but infection took place and a week later pus drained from an opening in the wound. At the same time the patient became listless and played very little. He wanted to sleep a great deal of the time, and about September 1, the mother noticed the boy was drinking large quantities of water. He passed urine very frequently, and the mother states that flies gathered in large swarms about vessels containing this urine. The boy developed a strong appetite for meats about this time. There were several "boils" on various parts of the body, and an injury to the little finger of the left hand gradually became blackish-blue and remained so until admission. On coming into the ward the child complained of pain in the abdomen and could not be com-

pletely aroused.

Physical examination showed an emaciated, dehydrated, mulatto boy of three years. His weight was twenty-five pounds and a half. He lay still in bed, breathing very deeply, eyes sunken, abdomen scaphoid, breath heavy with a sweet acetone odor, temperature 101° F. Examination also revealed enlarged tonsils, acutely inflamed, terminal phalanx of left little finger blackish-blue. Urine: sugar 4 plus, diacetic acid and acetone heavy. Blood sugar 400 mgm. Carbon dioxide of the blood 20 VP.

Treatment was not different from the standard procedures now in use, since the advent of insulin, with the exception of a few details which were applied in order to make the plan practical for so young a child. Glucose was forced in the form of orange juice; insulin was given by hypodermic, a total of fifty units in the first twenty-four hours. Water was forced by mouth and by gavage. Twenty-four hours after admission the boy was bright, sitting up playing in bed, and very hungry, the carbon dioxide of the blood now showed fifty-five VP. He was put on a diet, liquid in form, divided into four feedings, the total values for the day being protein 38 grams, carbohydrate 50 grams, fat 81 grams. The urine was examined every four hours, and insulin was given one half hour before feeding in amounts necessary to keep the urine sugar free. The diet was gradually changed to a semi-solid type and included green vegetables, scraped meat, cod liver oil, and orange juice. The patient gained weight and strength very rapidly and was discharged one year after admission with the weight of forty-five pounds which represents a gain of twenty pounds in twelve months. In spite of having had to live in a hospital over so long a period of time, this boy presented good muscular tone, good color, negative tuberculin test, good nutrition, and seemed in every way much above the average colored child in general development.

Ultraviolet light was used as an adjunct in his treatment with very interesting results. This light treatment was introduced when the patient had been in the hospital for one month. At this time his diet had been unchanged for 2 weeks and the amount of insulin taken had been unchanged for ten days. He was given ultraviolet light for five minutes at a distance of thirty inches. Two hours later the patient suffered the severest form of insulin shock, with unconsciousness, convulsions, cold hands and feet, and very shallow inspirations. After the introduction of orange juice and glucose by gavage, the patient regained consciousness in twenty minutes. This shock was followed by three or four hours of

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wild delirium and hallucinations. Lumbar puncture gave greatest relief. Further ultra-violet light treatments were given but without any insulin shock, but it is very interesting that during the following month the patient was able to metabolize twelve hundred calories per day for fourteen days with no insulin whatever. Infection of the nose and throat intervened at this time and insulin was again necessary three times a day.

This patient has been sent home under the care of his mother whom we have instructed in the preparation of his diet and in the giving of insulin. We have the mother report to the pediatric dispensary twice a week. The mother examines the urine two hours after each meal and increases or decreases the amount of insulin necessary according to these determinations.

DISCUSSION

S. C. Frankel: Diabetes in the colored race is comparatively rare. As we know it is more frequent in the Jewish race than any other race and less frequent in the African; why we do not know.

The treatment in a negro child such as the one exhibited (aged three years) becomes quite a difficult problem. The question in my mind is, what will Dr. Smith be able to do with this child later? At present the mother is giving the child three injections of insulin daily, and later probably less will be required, but the question is how long will she be able to continue this treatment and will it be necessary indefinitely? When the child is older he may have a craving for carbohydrates and it may be impossible for the mother to prevent his eating candies, ice cream, cakes, bread, etc. For this reason it seems to me that Dr. Smith and the mother will have quite a job on their hands in continuing the insulin treatment and preventing the child from eating sweets, etc. When he becomes older the child will get beyond the control of his mother and she will be unable to prevent him from taking carbohydrates, the craving for sweets being natural in children.

I would like to have Dr. Smith in closing outline his ideas of managing this child when he becomes five or six years old.

T. Cook Smith (in closing): I recognize that the future treatment of this child is going to be quite a serious problem especially in his home surroundings. I do not see how it will be possible to prevent him from getting carbohydrates. The home surroundings are unfavorable, the parents have separated two or three times, but at present are living together. The mother is instructed to bring the child to the hospital every other day for the time being. If the parents again separate there will be nothing to do but send the child to the hospital where proper care can be given him. The problem presented is an

unusual one. It is our intention to allow him to remain at home so long as we can, that is so long as the mother can take care of him there, and to have him return to the hospital whenever it becomes necessary. He is now receiving three injections of insulin daily. We hope shortly to reduce the treatments to once daily.

The child has been under treatment about a year and his improvement has been remarkable. He is now robust and healthy in appearance and is growing and gaining weight constantly.

INTRAVENOUS ABSORPTION AFTER CAUDAL BLOCK.*

By DAVID C. ELLIOTT, Louisville.

Caudal anesthesia is one of the safest and most established procedures of regional anesthesia, and until recently no serious accidents had been recorded following its administration.

Zwiefel, in reporting 4,200 cases, notes ten fatalities. In but three of these, when death followed within ten minutes after the injection, does he hold the anesthesia responsible. The cause of death is reported as acute procain poisoning.

In a series of cases coming under our direct or immediate observation, we have not seen death precipitated by caudal anesthesia. We have, however, seen mild transient reactions, and recently a most severe case of respiratory paralysis which persisted for two hours and forty minutes.

CASE REPORT.

Mrs. D., Primipara, aged thirty-four years, entered the hospital in labor and received the usual ether-oil rectal anesthesia. No further progress was made until the following day, when labor really began. At 10:30 a. m. there was complete cervical dilatation with the infant's head advancing on the perineum.

Caudal anesthesia was induced at 10:35. With a medium-sized nickeloid needle, three inches long, entrance into the sacral canal was easily effected. More than one inch of the shaft was showing outside the sacral hiatus. Neither blood nor spinal fluid was obtained upon aspiration when the needle was slightly withdrawn and rotated.

With but one-and-a-half inches of the shaft of the needle within the sacral canal, 40 cc. of a freshly prepared two per cent novocaine solution was slowly injected. Aspiration was attempted prior to the injection of every 10 cc. of the solution. The patient was requested to report any headache, optical distress, or sensation of nausea. She said she "felt fine and appreciated the relief from her pains."

Perineal anesthesia was soon complete, and,

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upon experiencing vigorous uterine contractions without pain, the patient assisted well with each expulsive effort. The membranes had ruptured and the head was on the perineum, in fact partially delivered, when the patient suddenly complained of being unable to breathe. Her respirations were at first short and labored, then, becoming fewer and irregular, finally ceased entirely. This was at 11:00, twenty-five minutes after the injection had been completed.

As soon as the patient complained of difficulty in breathing she was raised to an erect position, but as she continued to become worse artificial respiration was immediately started and inhalations of oxygen (100 per cent) given. Pituitrin (minims v) had been administered at 11:00, but had no effect. At 11:10 caffeine sodium benzoate (grains 7, 1-2) was injected intramuscularly.

The patient showed no sign of improvement. The slow ocular oscillations soon ceased and the pupils began to dilate. Artificial respiration with oxygen was maintained, but the heart action gradually became slower. The rate—90 at the apex taken with a stethoscope—declined to an irregular, intermittent beat and suddenly paused for a seemingly prolonged period. We immediately injected directly into the heart, after blood had been withdrawn into the syringe, 2 cc. of adrenalin chloride (1:1000) and increased the depth and frequency of artificial respirations. At 11:15 the heart began beating. The bounding pulse rate increased to 180 or more. The systolic blood pressure rose to 100 mm. Hg. and the patient's color improved. There were no signs of returning consciousness. As respiration did not become spontaneous, it was maintained with oxygen.

The infant's head was slipped over the perineum, using low forceps application, and delivery was completed at 11:30. The infant was pink and breathed promptly, causing no trouble whatsoever. The mother's cardiac action became slower following delivery, but was maintained by administering 2 cc. of caffeine sodium benzoate intravenously.

Our efforts were concentrated upon maintaining the heart rate, which was not permitted to decline below 70 per minute. Repeated intravenous injections of caffeine never failed to accelerate and maintain the rate over a period of twenty minutes or longer. Digitalin (1 cc.) and pituitrin (1 cc.) finally held the rate steady for longer periods. We did not deem it safe to give massive intravenous injections because of the embarrassed circulatory condition. At intervals, when cardiac action seemed good, oxygen was discontinued. Since respiration was not re-established, and as the heart rate became slower, oxygen was

readministered. No carbon dioxide was available for use as a respiratory stimulant. Finally, at 1:40 p. m., slight diaphragmatic motion was observed, and with a little further assistance respiration was fully re-established at 1:45, exactly two hours and forty-five minutes after it had ceased.

The patient returned to consciousness at 2:00 p. m., and was placed in slight Fowler position, the thorax being kept warm with hot water bottles. Except for a slight post-partum rise in temperature (99.6° F.) the patient experienced an uneventful recovery.

A somewhat similar experience may be sufficiently interesting to warrant brief mention: A man, aged 50, received caudal anesthesia before a meeting of surgeons prior to a urological operation. Forty-five cc. of two per cent novocaine solution was used. Respiratory failure was almost immediate, and after two hours of heroic measures this patient also recovered. It was generally conceded that, in this instance, the dura mater was punctured and that an overwhelming intraspinal injection had been given.

In the case herein reported in detail, since twenty or twenty-five minutes had elapsed before any respiratory embarrassment was noted, we believe that the acute novocain poisoning was dependent upon delayed venous absorption.

EXPERIMENTAL WORK ON CAUDAL BLOCK.

To determine the levels reached by various caudal injections, it seemed advisable to inject an opaque substance into the sacral canal of the cadaver and then with the roentgen-ray to immediately obtain a photographic record of the fluid level present. The material injected has not been the same in each instance. Bismuth subcarbonate in oil, though of decidedly greater viscosity than the solutions used, has given the same fluid levels and also a sharper roentgenographic shadow. Using various materials in eight different bodies, we have found almost no variation in the level reached with definite amounts of solution.

In one body, dead but three hours, we noticed on developing the roentgenographic plates that 120 cc. had only reached a level opposite the sixth thoracic vertebra. Since this was the lowest level we had observed for this amount, we suspected that some leak had occurred, or that the needle had not entered the sacral canal. A roentgenogram through the pelvis revealed that a most decided escape of fluid had been effected, showing the bismuth to be present in the external iliac veins and the inferior vena cava. The probable course was through an injured vertebral vein and thence into the pelvic plexus. On autopsy one hour later the pathologist noted

that the kidneys, lungs and heart were all beautifully injected with bismuth which was present in ample amounts in the inferior vena cava.

Thompson, in his studies, noted that "while the injection (sacral) was being made, the eosin solution flowed out from both external iliac veins."

In reporting the foregoing instances of extreme respiratory paralysis following caudal anesthesia, we believe the increased pressure during the strain of labor forced a sufficient amount of novocain solution into the systematic venous circulation through an injured vertebral vein to cause the respiratory failure noted.

One case in our series of roentgen-ray studies definitely establishes the fact that absorption into the systematic venous circulation of solutions properly injected into the sacral canal is apt to occur under certain conditions.

NOTE: In the preparation of the foregoing paper I have drawn largely from my previous publications.

CHRONIC MYOCARDITIS.*

By R. HAYES DAVIS, Louisville.

I have chosen, for my paper this evening, the subject of "Chronic Myocarditis" on account of its great importance. It is not only one of the most frequent and one of the most serious diseases that flesh is heir to, but it is at times one of the most insidious, and one of the most difficult to diagnose.

Chronic myocarditis may occur at any age, but is by far most frequently found in patients after middle life. At this age there is more or less excessive connective-tissue formation in the heart, arteries and kidneys, and the heart has usually suffered from various types of infections, and the general wear and tear of life, and the recuperative power has been lessened. This is especially true in individuals who have discontinued their exercise, and have had a sedentary life with excessive accumulation of fat, and have suffered the poisonous effects of the excessive use of alcohol and tobacco. I shall not attempt to discuss in further detail the etiology of chronic myocarditis in so short a paper, because the causes are many and varied, and I must proceed to the recognition of the disease itself and its management.

As has been stated, chronic myocarditis is, at times, very difficult to diagnose, and patients who have just been examined by a competent physician die suddenly after slight exertion, or die from unexpected heart failure following some surgical procedure, where

their hearts had just been previously pronounced sound. To form a good judgment as to the soundness of the heart muscle, one must abandon the idea that all that is necessary is to listen to the heart sounds; this is far from correct. In many cases just before a fatal attack, the heart sounds may be perfect, and even a rather painstaking examination by ordinary means will not reveal anything abnormal. Therefore, we must look further, and by looking further I mean that a most careful study of every phase of the case must be made and this consists of: (1) A careful study of the history of the case; (2) a general physical examination, with determination of the condition of the other organs, and (3) a study of the heart itself, which consists of a study of the size, shape and position, the condition of the arteries, and the tension, the heart sounds, the rhythm, and finally the use of such valuable aids of precision as the electrograph and polygraph. If this careful study is made of each case, I do not believe that many cases of chronic myocarditis can be overlooked, because some departures from the normal is almost certain to exist that will enable the examiner to form an opinion. However, even then it is frequently impossible to determine the seriousness of the malady, because as a rule we have no means that will enable us to learn the extent of the degeneration or the power of recuperation of an individual heart. This can be told definitely, as a rule, only by careful observation, and the effect of the treatment administered.

When a patient after middle life suddenly finds that he cannot make the same exertion that he has been in the habit of making, without decided dyspnea or a sense of suffocation, this is an indication usually of myocardial failure. It is a sensation, as a rule, that one cannot obtain all the breath necessary, and differs entirely from the ordinary "shortness of breath" of a normal person after exercise. As the disease progresses, the patient finds that he is able to do less, and less, and if let alone, finally approaches the condition of advanced heart failure, which is so familiar to all. Many of these patients in early stages, present various digestive symptoms due to poor circulation in the digestive organs after eating. How often I have heard patients with various types of heart attacks attribute their discomfort to gas! And still death certificates are signed in heart failure cases as "acute indigestion." This is because so often digestive symptoms in these cases play such an important part, and the heart sounds and pulse show so little change, that the physician is wholly misled. A rapid pulse is very important as a diagnostic sign, and is easily recognized. Various types of precordial pain of-

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ten exist, and this varies from only a slight discomfort to fatal attacks of angina pectoris. Slight edema of the feet, if not explained by other causes, is of great importance. Various symptoms due to poor circulation in the brain should not be overlooked, as they are often due to myocarditis, as dizziness, fainting attacks, drowsiness, poor memory, mental fatigue, inability to concentrate and even hallucinations. Finally complaints of general weakness, and physical exhaustion, coldness of the extremities and inability to keep warm, and easy fatigue after slight exertion will make one suspect the heart as the true cause.

If the case is recognized in its early stage and properly treated, there is a good chance of rebuilding the reserve force of the heart muscle, often for many years but if these early signs are not recognized, the condition gradually becomes progressive and sooner or later the symptoms of advanced heart failure appear, if not a sudden death.

In the examination of a suspected heart case, the size of the heart should be accurately determined, and the best method for this is an roentgen-ray film made at a distance of six feet or over, as all distortion is then eliminated, and the photograph shows the exact size of the organ. This can be compared with tables for different heights, weights and ages. Of course, a study of the aorta should be made, preferably also fluoroscopically, and also the shape of the heart should be studied.

The condition of the arteries is very important. If there is much arteriosclerotic change, there is certain to be fibrous changes in the myocardium. The blood pressure is important—high tension leads to great wear and tear on the circulatory organs and subsequent degeneration, and after the heart has begun to fail, a high blood pressure very decidedly lessens the chance of re-establishment of a good degree of reserve force, it has been my experience. The heart sounds are valuable from a diagnostic standpoint. Aortic murmurs show disease about the aortic valve, and mitral murmurs show mitral stenosis, or insufficiency, and the soft systolic murmur of relative insufficiency in dilatation is of great importance. The heart sounds also give an idea of the tone and strength of the muscle in certain cases, and they are of great value in the determination of various types of arrhythmias.

The presence of arrhythmias is one of our greatest diagnostic aids when they exist. Sinus arrhythmia is frequent and is more often an indication of cardiac strength than otherwise. It is not important as a diagnostic aid to disease. Extra systoles are either of the auricular or ventricular type, and their importance is greatly limited, as they so often

occur from nervous and toxic states rather than from organic heart disease. However, if they make their appearance after middle life, and are frequently present, they may be a sign of myocardial disease. Paroxysmal tachycardia is a peculiar condition, and is frequently a disorder of many years duration in hearts apparently free from important organic change; but, on the other hand, this type of rhythm may be the result of chronic myocarditis. Auricular flutter may occur at any age, but is more frequently the result of defective types of myocardial degeneration. Auricular fibrillation is one of the most frequent types of arrhythmia and occurs most frequently in hearts that are "breaking down" from organic disease, although not always. Heart block may be functional or toxic, but it is usually the result of degenerative changes in the heart, involving the auriculo-ventricular bundle, especially those due to syphilis. Pulses alternans is a condition of alternating weak and strong contractions, and is most frequently a sign of advanced heart failure.

The electrocardiogram is the most valuable means of determining arrhythmias, and it is also of great value in determining other abnormal changes in the heart not associated with irregularities. For example: the inversion of the "T" wave in lead No. 2 is always pathological, as is also often the case of such an inversion in lead No. 1, and this abnormality in lead No. 2 is of bad prognostic significance. The presence of the indication of preponderance of one side or the other is of importance, and the lengthening of the "P-R" interval is of great value as a diagnostic aid, and also as an indication of excessive digitalis administration.

Time will not permit a further discussion of the electrocardiographic findings, but this is an aid of the greatest possible value in the study of heart conditions. It is true that not every diseased heart shows an abnormal electrocardiographic tracing, but it is true that every electrocardiographic tracing that departs very far from the normal indicates an abnormality in the heart. The polygraph is also of considerable value, but requires time and patience in its use, and not in every case can a jugular tracing be obtained. It has this advantage, however, that it can be taken to any bedside.

To recapitulate: If every heart is studied carefully, symptomatically and thoroughly, and physically, with also the aid of the roentgen-ray and electrocardiograph, there will usually be found some one or many abnormalities that will permit the determination of the existence, or nonexistence, of myocarditis, and often of the degree, and if the effect of treat-

ment is studied, usually a fairly definite prognosis can be given.

I shall not attempt to discuss fully the question of the treatment of heart cases, but there are certain important points that I should like to emphasize, because one still sees from time to time a hypertension patient with a good heart muscle put to bed for several weeks to lower the blood pressure, or a mild cardiac failure patient kept in bed too long without exercise, or a severe heart failure patient who is permitted to get out of bed and take certain exertions that may spoil all of the chances of recovery. The questions of rest and exercise are two of the most important factors in the management of heart conditions, and the best judgment is required in the directing of a patient. If the heart muscle is good, it is unwise to curtail the exercise unless excessive. There is no safer method of keeping the heart muscle strong than to give it a proper amount of work to do. It is very dangerous to keep hypertension patients in bed for any length of time, and this applies also to elderly people, as the heart muscle soon weakens from the lessened exercise in the same manner as do the skeletal muscles, and degeneration may rapidly ensue. Many aged people and hypertension cases could be kept alive for many years longer if their exercise is properly controlled and continued. In cases of mild heart failure, with only beginning symptoms, at times exercise has to be lessened if excessive, and at times increased if the individual is leading a too sedentary life. This requires good judgment, but in any case as soon as the symptoms have disappeared, the patient should be put on carefully controlled and gradually increasing exercise, and after a proper amount has been attained, this should be continued. With the severer cases of heart failure, rest in bed, and at times the most absolute rest in bed, is imperative, until all the symptoms have disappeared, and then the most carefully regulated exercise should be begun. A system that I have found valuable is to have the patient walk slowly three times a day, beginning with one minute the first day, and increasing one minute a day for ten days, and then I control the exercise by prescribing distances and the speed of walking. The Schott exercises are also of great value, as is also massage in certain cases, and the use of the Nauheim baths have accomplished the most favorable results in certain cases. At any rate, a good rule to follow is to increase the exercise gradually to an equivalent of a three to five mile walk a day, and have the patient always stop if he has any distress whatever. Any symptom of distress is an absolute indication that too much is being done, and if this is continued the reserve

force is again exhausted. Oftentimes heart cases can be kept well for years and the patients lead useful lives if they will take certain rest days, such as Saturday afternoon and Sunday in bed, and various other modifications. Each case, however, requires individual study.

Diet is important and should be properly regulated. The blood chemistry is a great aid to the proper control of the diet. It is very important to give the correct amount, not too much, or too little, and here again this depends upon the individual case, and the complications that exist. It is important to emphasize this fact, however. As we all know obesity is one of the most dangerous maladies that exists, and a fat patient is always better if the weight can be reduced, but in heart cases this is often dangerous and should be done most carefully and most scientifically. This also holds true in individuals over fifty who are apparently well. I have seen a number of cases of heart failure brought about by indiscriminate reduction in weight by laymen. This is especially true if the protein is reduced below two-thirds of a gram per kilogram body weight. Too little protein invariably leads to degeneration of the cells in the vital organs.

With regard to the useful drugs in heart cases, a thorough knowledge of the scientific use of digitalis is essential. Digitalis should generally be given to the point of tolerance, and then reduced to a proper dosage for the individual and discontinued after the symptoms subside, or continued indefinitely in certain cases. In auricular fibrillation, it should be given generally every day during the rest of the patient's life. The quantity for digitalization should be regulated according to the weight of the individual. The best preparations are the tincture and powdered leaves, and there is seldom any necessity to change to others. For hypodermic use an aqueous solution should be used, and in emergencies for rapid digitalization ouabain or strophanthin intravenously are the best preparations. Quinidine is very valuable in cases of auricular fibrillation where digitalis fails to give the desired results. Morphine is of great value to produce rest and is often absolutely necessary, and in heart attacks it is by far the best emergency drug. These drugs with the use of purgatives form the principal medication in heart disease. Of course, at times other stimulants are useful, and necessary, as is also amyl nitrite in attacks of angina pectoris, but atropine should be used with great caution as it paralyzes the nerve endings, and hence counteracts the effect of digitalis. Such complications as anemia, of course, must be treated appropriately. How-

ever, if a heart case does not respond to the effect of absolute rest, the proper use of digitalis, with the aid of morphine and continues to progress, there is little hope of improvement.

DISCUSSIONS

George H. Tichenor, Jr.: Dr. Davis has covered the field of chronic myocarditis very thoroughly, and my remarks will be largely by way of diversion. Fortunately I had a preceptor who was one of the old school, and I graduated under the new regime when specialism in medicine was just beginning.

Anyone who has ever—as I have—managed a large hospital knows from his experience in the autopsy room the mistakes that are made in the diagnosis of myocarditis. A number of years ago the superintendent of a certain hospital reprimanded one of his assistants because it was shown at autopsy that a patient had died of myocarditis although this was not mentioned on the records. The assistant retaliated by saying it was shown by every text book in the world that this disease was at times very difficult to diagnose. That is the experience of 99 per cent of the profession and is stated in every text book. It seems to me with proper study of fundamental principles and consideration of known facts that many of these mistakes could be avoided. We should no longer console ourselves by saying that all authorities agree it is difficult to diagnose cardiac conditions. I think primarily the cause of our trouble lies in our early training. If one merely reads about rales, murmurs, etc. in a text book, he has little conception as to what the sounds really are. There is only one way he can arrive at the proper conclusion, and that is by systematic work in the hospitals or clinics and then following the patients to the dead house. However, not all of us are endowed with a perfect memory sound. By memory sound I mean information that comes from the study of harmony.

The first thing that a great musician always asks from his prospective pupil is to play something from memory. The vast majority of people, even some musicians, do not possess this faculty. The medical schools give no training along that line, and there are various other qualifications necessary in addition to memory sound. As an illustration, take some of the celebrated performers like Blind Tom. If anyone played a piece of music for him, he could take his place at the piano and duplicate it perfectly. However, when it came to the exercise of higher faculties in the way of composition or interpretation, outside of the ordinary sounds of nature, he had no ability whatever. As you may know a great musician never sits at his instrument to compose a piece of music, he writes it first and then plays it sometimes many years afterward. His sound memory is so acute and

he is so well trained that he writes his score the same as you would a medical dissertation.

That is the trouble in our medical schools, the lack of proper training along certain lines, a great many graduates do not know the difference between mitral regurgitation and some other cardiac lesion when they hear it. They have no memory for that particular sound nor for different phases of the sound. Many of the medical examiners for the large insurance companies make the most grievous mistakes. The difficulty with medical practice after all, it seems to me, is lack of proper training in certain directions.

The ancient idea that a surgeon's fingers are first to be trained rather than his mental attitude, is a motto of Marion Sims and it is a good one. When any surgeon operates he is doing his own operation; he has learned that certain things must be done and his technique makes it his own operation; he knows that he must follow certain lines of procedure in performing a classical operation.

In medicine our senses must be trained more thoroughly in the school. First of all when a student enters medical college not only his general aptitude for the profession, but his qualifications along certain other lines, should be studied. For example, his capability for memory sound, what he can observe per minute with his eye, his sense of touch must be trained, and these things take time. It also takes hospital experience, and I believe the medical student should be given a certain amount of hospital work from the time he enters school. Most important of all is his aptitude for the medical profession. In former years many men with one eye or one arm were permitted to study medicine. Men of this type are handicapped from the beginning. Medical practitioners need two good feet and two arms. We must not lose sight of these essential things. It is like the question Dr. Buttorff brought before us, i. e., the question of immunity. Really when we consider the basis of things, we have not progressed very much so far as actual facts are concerned about the question of immunity from the days when Pasteur first promulgated his ideas. We have a certain amount of hospital data, but we have considered the matter from only one point of view. In estimating immunity we do not take into consideration the importance of climatic conditions, chemical changes in the body, etc. in arriving at our results. In other words, to use a common expression: "Medicine is robbing science of its clothes and seeking to protect it with a mask over its face." It is time to remove the mask and see what we actually know.

Then, again, our hospital statistics are not satisfactory. In one country a man gives us such statistics as he gets; a man in other country gives us the statistics he gets. There is a vast difference not only in the men but also in the

preparation of the products they are using. That is not taken into consideration in connection with their statistics. Take, for instance, the organic or glandular preparations. Nowadays many physicians are returning to the use of organotherapy. Not all of these agents are prepared in the same way. Chemically there is a vast difference in the preparations, and naturally the results are going to be different. Some years ago I tried to get Congress to concentrate its efforts to a Research Bureau in Washington so we could collect these various statistics from different parts of the country and systematically study and classify them and thus have some basis really for scientific medicine, but nothing was accomplished. Until we do that we are simply grouping in the dark.

Carl Weidner, Sr.: Dr. Davis has presented a paper which is of interest to all of us as we see patients with myocardial affections often enough. Myocarditis is a disease from which any of us may suffer some of these days, as death occurs most frequently from the heart or the brain. Dr. Davis has covered the subject so fully that we can only emphasize the outstanding features. A careful history in every case is of the greatest importance. Most of these cases begin with an infection of the heart muscle or some form of poisoning; in other words, a history of any serious infection, be it influenza, pneumonia, diphtheria, measles, pertussis, etc., may lead to the correct diagnosis if the patient is found suffering from cardiac symptoms. As Dr. Davis has well said, the diagnosis is not easily made from one examination, because you may find the patient doing well apparently and still when examined by other means on repeated occasions it may be found he is far from well.

One of the most important diagnostic guides is the test of exercise. If the patient has been taking exercise and gets short of breath on slight exertion we know it is harmful. That is an important point. If the heart becomes weaker and fatigues easier than the normal heart, on taking physical exercise, that is an important diagnostic feature. If you make the patient take exercise and fatigue is increased that is a valuable point in the diagnosis. The tendency to physical exhaustion plus cardiac weakness, tendency to cardiac dilatation, shortness of breath with signs of break in compensation, either pulmonary or systemic, are the most important features we have to consider in making the diagnosis. Irritability of the heart and the various forms of arrhythmia, either temporary or permanent, also are essential points in the diagnosis, especially when the individual gives a history of infection or has reached a certain time of life. Unfortunately we cannot prevent but few of the diseases that cause myocarditis infections. If we have before us a cardiac case that does not present the signs of valvular disease,

if he has the symptoms mentioned by Dr. Davis, including weakness, irritability, arrhythmia, disturbance in the circulation, etc., I think we can make the diagnosis of some myocardial affection without any further question. Of course we know that valvular disease and endocardial disease are separate and distinct conditions, though frequently accompanied with myocardial changes.

One of the most interesting features is the question of exercise and rest to the patient. How much can we allow the patient to do? That is sometimes a difficult question to decide. When must we tell a man he must stop playing golf? How much physical exercise can he stand with safety? These questions are not easy to answer. We have to be guided entirely by testing the patient's ability to stand exercise.

The pathology in all these cases of chronic myocarditis is a gradually progressing degeneration of fibrosis of the heart muscle. Fibrous tissue develops between the heart muscles, and we know that fibrous tissues cannot take the place of muscle. We cannot hope to improve the heart after fibrous tissue has developed and normal muscular tone has been lost, and the final outcome will be dilatation of the heart with fatality preceded by the ordinary symptoms of disturbance in circulation, affecting the respiration, the kidneys, the liver, the development of ascites, etc.

With reference to the administration of digitalis in chronic myocarditis: When the disease has progressed to the point where the normal musculature of the heart is replaced by fibrous tissue, by the administration of heroic doses of digitalis you are likely to kill the patient because the heart is unable to respond to the stimulation and increased efforts. The proper thing is to test the patient by light, gradually increasing exercise, such as recommended by Oertel, in that way increasing the tone of the heart muscle. Digitalis may be given in small (tonic) doses, but heroic doses should be avoided. Strychnine is valuable as a tonic.

As to the use of morphine: This drug may be administered when necessary to secure proper rest for the patient. When the heart begins to show signs of failure or dilatation it is advisable to place the patient in bed and watch him carefully to determine the period he should remain in bed. Complete rest in such cases is an important item. Morphine in small doses when pain develops will of course increase the patient's comfort.

Emmet F. Horine: In so-called "chronic myocarditis," I consider the most important feature to be a determination of the etiology. It is necessary not only to do what Dr. Davis has said, to obtain the history very carefully, but to make a painstaking general physical examination as well as a special heart examination using graphic

methods. However, the central idea should be the attempt to discover the etiology: to determine, for example, whether the chronic myocardial failure symptoms result from arteriosclerotic processes in the heart or from long continued hypertension with or without kidney changes, whether there is a syphilitic lesion or whether there is any definite focus of infection present in the body. The essential prerequisite is to carefully sift the etiological factors, and by so doing some definite treatment can be initiated.

With reference to the aid furnished by graphic methods: I agree with Dr. Davis that considerable assistance may be obtained. Particularly in individuals more than forty years of age will the electrocardiograph be found of value as showing definite evidence of myocardial changes. Dr. Davis mentioned the importance of delay in the conduction of the impulse from the auricles to the ventricles constituting the early grade of heart block. In addition he described changes in the "T" wave which are of importance. Of further importance would be evidence of an abnormal spread of the excitation wave through the ventricles. All these abnormalities point to myocardial changes.

Quite frequently we see patients who complain of vague symptoms apparently indicating myocardial changes, and when we study them more carefully we can find no actual evidence of myocardial disease. Looking further we may find some chronic process present which may be giving rise to the symptoms so-called "chronic myocarditis." Just lately I have had under observation a patient who presented some shortness of breath, edema, sluggishness and other symptoms that would make one think of a so-called chronic myocraditis. However, this individual presented a rather low blood pressure, and with that as a clue a basal metabolic rate determination was made. A decidedly lowered metabolism was found, approximately minus 25 per cent. The patient made wonderful improvement through the administration of dried thyroid.

The important thing in heart work is to determine the etiology.

R. R. Elmore: There are two features relative to the diagnosis of myocardial disease to which I would like to direct your attention. The first is the breath holding test. The patient takes a deep inspiration and holds his breath as long as possible and the number of seconds the breath is held are observed,—a very simple test,—easily made at the bedside of the patient or in the office. Alone this test may not be very significant, but associated with other findings is of considerable importance. I recall several years ago in this amphitheater a courageous physician, with nearly every joint in his body stiffened or ankylosed from arthritis, sat in an invalid's wheel chair and delivered a lecture on the

importance of the breath holding test.

The second is the use of an instrument termed the cardio-respiratory apparatus. The detection of early myocardial insufficiency is of tremendous economic importance to life insurance companies. This need was responsible for the development of the cardio-respiratory apparatus. The test is accomplished by increasing the heart load under natural conditions of pulmonary tension, and amounts to a measured exercise of the myocardium. The exact measured load can be reproduced at subsequent examination and the progress or decline of the patient ascertained. So this apparatus not only assists materially in the detection of early stages of myocardial insufficiency but is of value in establishing a prognosis.

The differentiation between gastric symptoms and cardiac symptoms is not properly stressed nor practised. It is an experience of frequent occurrence to a man in general practice, that a patient comes under observation with a history of so-called "indigestion" and by careful study and observation we find evidence of myocardial changes. It is not a well recognized fact that advanced myocardial changes are frequently, if not always, attended by alimentary disturbances? These patients may have previously received proper advice as to diet, habits and exercise, but the gastric symptoms persisted. By adding a positive cardiac tonic to the preceding treatment the patient makes a symptomatic cure.

The dosage and methods of giving digitalis have been revolutionized. Among modern clinicians the "tonic dose of digitalis," three to five drops of the tincture or corresponding dose of other preparations, has gone into the discard. In estimating the dosage of digitalis it is assumed that one and one-half grains or fifteen minims of the tincture will digitalize ten pounds of body weight. A patient weighing 150 pounds would require fifteen times as much or a total of 22 and 1-2 grains or 225 minims. This may be administered over a short or long period. When carried over several days allowance should be made for the elimination from the body of one and one half grains daily. By keeping in mind the amount of the drug necessary to digitalize the patient and the amount eliminated daily we have a reasonable basis on which to calculate the proper dosage of digitalis. Admitting that this method is not one of mathematical accuracy, it certainly is a decided improvement over the haphazard custom of twenty years ago. The cumulative tendency of this drug should not be overlooked and in the event a patient is to take digitalis continually over a long period of time, the dosage should be arranged so that the patient has two or more free digitalis days each week. This method automatically eliminates the danger of overdosage in these patients who are seen only at long inter-

vals.

William A. Jenkins: I wish to say a few words about the diagnosis of chronic myocarditis. A great many of my colleagues have been kind enough to ask me to see cardiac cases in consultation during the last twenty-five years, and I have also tried to keep in close touch with such cases in the city hospital. The diagnosis is generally the most difficult situation we have to meet in this type of cases. If ten or fifteen of the best clinicians in the country could agree on the exact underlying condition responsible for chronic myocarditis, they would also agree as to the line of treatment that would be appropriate for the case in point; but unfortunately we are not all agreed as to the diagnosis. We are all familiar with the so-called run-down, nervous, overworked individual presenting moderate cardiac signs, etc. I was formerly very prone to speak of such conditions as due to myocardial change, myocarditis, even chronic myocarditis. We know also, as mentioned by Dr. Horine, there are many other conditions, such as general miliary tuberculosis, which does not kill but keeps the individual below par, will also affect the cardiac system, with low blood pressure, irregularity of the heart rate and poor rhythm in force and frequency, occasionally strong, oftentimes weak, sometimes dicrotic, and the muscular action is not good. These conditions are sometimes looked upon as due to myocardial change. Osler and other prominent authorities say that in pernicious anemia and also in asthenia there are frequently noted myocardial symptoms without there necessarily being any change in the myocardium. Take such a condition as acute, typical Addison's disease, we have every phenomenon of cardiac disease, and yet there is not much myocardial change. All these things increase the difficulties in diagnosis. On the other hand, it is sometimes especially easy to make the diagnosis, particularly when the cardiovascular mechanism is exhibiting evidence of disease throughout its entire extent with the usual signs and symptoms. In chronic valvular disease with hypertrophy and dilatation accompanied by evidence of chronic arteriosclerotic changes, or in cardiorenal cases of long duration with sclerotic kidneys, etc., we are perfectly safe in postulating a certain amount of myocardial change. The same thing is true if there is infection of the aorta at its origin or in connection with the coronary arteries which feed the heart, or any other lesion where we would have produced anginoid or typical anginal attacks, perhaps a small coronary infarct, etc., we are safe in postulating chronic myocardial change in these cases. However, there are a great many cases in which perhaps fibrotic changes have occurred in the heart muscle, such as we see frequently in certain types of individuals, without any special involvement of the

arteries or the conduction bundle, and yet permanent changes are present. A Louisville physician had me "fooled" for quite a long time. When kept in bed at rest with attention to his intestinal elimination and general condition this man has no symptoms. Electrocardiographic tracings have been made on two occasions and nothing abnormal found. If he is allowed to get out of bed and take a moderate amount of exercise he develops typical auricular fibrillation, he becomes completely cyanotic, dizzy and has to sit down on the curbstone. He now has some changes in the tissue of the conduction bundle, but at that he looks well. There is no change in the musculature or increase in the size of the heart. So the diagnosis may be fraught with considerable difficulty, and I would say the greatest stumbling block in chronic myocarditis is in being sure of the diagnosis. That is the feature to which we must devote the most attention.

There are two or three lines we are safe in following or make inquiry along these lines for changes: The first essential is that we must make a thorough, careful examination of the patient. Repeated examinations should be made at stated intervals covering a considerable period of time, not only weeks but months. When one begins to secure data of this kind, in addition to the facts obtained by special heart examinations, etc., it will be found that many conditions can be differentiated. If the clinical findings are constantly present they can be demonstrated by careful investigation. If the individual can exert himself to the point of ordinary physical exercise as determined by proper tests and according to his natural strength, occupation, etc., he is in no particular danger, but if he is unable to do these things, then one may suspect the presence of some cardiac trouble. Then it is advisable to make careful examinations at intervals covering a considerable period of time to determine the exact state of affairs. So it would appear that the differential diagnosis would be a question of diagnosis by the exclusion of other like conditions or pseudo-conditions which may closely simulate the phases underlying myocardial change. Then, third, which is the weak point in the management of these cases, is that much time is required, because they have a tendency to become chronically progressive. Along these three lines I think we will find the best data for the prevention of mistakes in diagnosis which is really the crux of the entire situation.

There is only one point on which I disagree with Dr. Davis, and that is in regard to treatment. He spoke of digitalizing the patient. Under the conditions described digitalization is looked upon I am sure by the majority of clinicians as a rather dangerous procedure, as we understand the meaning of the term digitalization. Certainly this is true in the average case

with any great amount of myocardial change. Digitalis is useful but should be administered in moderate doses and the effect carefully watched. I am sure digitalization would be frowned upon by clinicians as the treatment for myocardial degeneration.

R. Alexander Bate: In every case of chronic myocarditis there will be changes in the symptoms, according to the changes that have occurred in the myocardium, and the treatment should likewise vary. These are of several types: there may be infiltration or degeneration, overdevelopment (hyperplasia) or atrophy (hypoplasia) of the muscle, and according to the changes that have occurred will the treatment be varied, for the treatment must be suited to the change.

Every point made by Dr. Davis in his paper was most excellent. There are other phases of his story, however, which may be emphasized. One of the speakers mentioned a very interesting point that has been recognized generally, and that is in making the diagnosis of myocarditis we must consider the importance of the so-called valvular sound. There is no question about the presence of endocardial murmurs in myocarditis. This was recognized and described twenty years ago by two physicians of Indianapolis, Indiana. The subject was thoroughly investigated at that time and verified by autopsy findings,—in forty-nine of the fifty autopsies in which the history showed that during life endocardial murmurs had existed. However, in only one of the fifty cases was an actual mechanical valvular lesion found. In other words, forty-nine of the cases were pure myocarditis. It is perfectly true that the sound was there and was heard, but this sound was made by the weakened heart muscle—just like a weakened or inelastic rubber ball will fail to expel its contents properly. Of course this is a means of assisting in our diagnosis, but because an individual has been considered in life as having a true endocarditis does not mean that an error has been made in auscultation. Many of us will also recall it was thought some years ago that if an endocardial murmur disappeared there had been a misdiagnosis or doubtful veracity. Now we know, as witnessed by the forty-nine cases mentioned, that at some time the muscle's weakness permitted the valvular sound, likewise muscular regeneration may have caused the sound to disappear. As shown by the essayist, often it is impossible without continued observation to differentiate these points.

Another interesting point was emphasized by Dr. Horine, i. e., that it many of these cases we find a high deficiency of thyroid secretion, in both young and old individuals, as the most frequent cause of muscle changes. In many instances the exhibition of thyroid principle, as stated by Dr. Horine, will relieve cases of this type. Dr. Horine also mentioned low blood pressure of a patient in whom the basal meta-

bolic test revealed hypothyroidism, and marked improvement occurred under thyroid administration. Hyperthyroidism produces a different syndrome.

In myocarditis due to functional causes there is practically always some change in the coronary arteries. Sajous showed years ago that posterior pituitary principles increased the quantity of blood passing through the coronary arteries, therefore this agent is indicated. It is worthy of note that in cases of high arterial tension thyroid must be administered with caution. The posterior pituitary principle will lower high blood pressure when given in small doses by mouth. Sajous' observation that posterior pituitary principle increased the quantity of blood going through the coronary arteries likewise proved his statement that it was very useful in angina pectoris. So there are one or two of these glandular products that may be given with much satisfaction. The posterior pituitary principle should be given in all these cases, it is without contraindications, even though the heart muscle may be degenerated, hypertrophied, atrophic or hyperplastic. It tones and stimulates other organs as well.

I believe in selected cases digitalis is as important adjunct. I prefer to administer the posterior pituitary principle in most cases, but other drugs are also useful. I like strophanthus better than any of the others. The mixed glandular treatment has been exceedingly gratifying in its results, such as small quantities of thyroid and corpus luteum combined with liver extract and other drugs that promote metabolism.

In my opinion diet is as important as any other form of treatment,—just as valuable as rest which has been emphasized. Regulation of diet has a tendency to prevent the dangers of disturbed metabolism.

There are a few cases of myocarditis due to infection, but in the majority of instances the symptoms are due to disturbed metabolism rather than infection. I believe in many of these cases we are able to offer a favorable prognosis.

R. Hayes Davis (in closing): I appreciate very greatly the liberal discussion that has been accorded my paper. Before considering the other phases of the discussion, I should like to speak in further detail about the use of digitalis. Evidently what I meant was not fully understood. My statement may have been more or less ambiguous. I mentioned in the paper that as a rule it was advisable to give digitalis to the point of tolerance, and later said that digitalization should be controlled by the body weight of the individual. The proper use of digitalis is one of the most important parts of the treatment of heart conditions. Not every patient, however, requires digitalis. Sometimes simply regulation of the life and exercise of the individual is all that is necessary to bring about

the most favorable results. Other patients require heroic doses of digitalis, and some of them require almost immediate digitalization to save their lives. There is such a wide variation in the use of digitalis according to the type of case being treated that it is impossible to formulate any rigid rules for its administration. It is a question of the judgment of the physician and the type of case with which he is dealing. It is very important in giving large doses of digitalis to watch its effect and to cease its administration immediately upon the production of toxic symptoms. It is a well known fact that when certain conditions exist in the heart from digitalis poisoning sudden death may be brought about. This is especially true in couple rhythm. That is the type of patient who not infrequently succumbs if digitalis is not discontinued at once. Therefore when using large doses of digitalis it is important to watch the toxic effect, study the nausea, vomiting, dizziness, intestinal disturbances, various types of arrhythmia, the presence of delayed transmission from auricle to ventricle, etc. It is important to watch these conditions very carefully. However, in the majority of cases, unless large doses are required on account of the emergency in which the patient is seen, it is better to give small doses, only the quantity necessary to bring about the desired result. That is what I meant by giving digitalis to the point of tolerance of the individual.

The question of the etiology is most important. The question of whether the heart condition has been brought about by arterial hypertension, arteriosclerosis, various infections which may have existed or may still exist somewhere in the body, etc., are of the greatest importance in the management of the case. Not infrequently some infection may exist at the time and may be removed, and in that case of course the patient has a better chance of recovery.

Thyroid disease is most important, especially hyperthyroidism. If the thyroid gland is too active and the patient has presented tachycardia for any length of time, the heart muscle is likely to show degenerative changes from fatigue and from the toxic effect of the thyroid. I have seen two cases of hyperthyroidism showing very evident auricular fibrillation in young people. In these cases the thyroids were removed and digitalis administered. One of these women has lived for several years without any return of the trouble.

Hypothyroidism is important because it leads to asthenia and cardiac weakness. The administration of thyroid in such cases is advantageous in relieving the symptoms.

One type I did not mention perhaps in sufficient detail which is of importance in the diagnosis and treatment, and that is the various

grades of heart fatigue that are not in any sense of the word organic. We know the heart muscle may become fatigued in exactly the same way as the skeletal muscles may become fatigued. This is also true of so-called nervous exhaustion. In people who are physically overworked the heart may show the effect of lessened reserve force on exercise and symptoms that would be indicative of heart weakness, and yet many of these patients have no indication whatever of actual myocardial degeneration. After the cause is removed the condition subsides and remains so.

Another important condition I did not mention is the question of the effort syndrome. This is a peculiar combination of symptoms often occurring in the young, especially in individuals having visceroptosis with heart situated generally toward the center of the sternum than otherwise and more vertical than the normal heart. This type of individual frequently shows cardiac symptoms on slight exertion, the pulse may rise to 150 per minute or more, he becomes dyspneic, he also has pain over the precordial area, cyanosis, with the presence of actual distress, and yet many of these patients have no evidence of organic heart disease, they live their natural lives and follow their natural occupations and die from other unrelated causes. Many of these patients are seen making it important for us to recognize this type and be able to differentiate it from actual myocardial degeneration.

The effect of exercise in relation to the diagnosis of myocardial degeneration is of extreme importance,—the individual who is suffering from cardiac weakness and unable to perform the amount of work he could do formerly; he feels distressed in one way or another; he has shortness of breath or whatever symptoms may develop; and he finds that as time goes on he is able to do less and less. A flight of stairs he could formerly ascend without effort he now finds difficult to do, or if he has been a hill climber in the past he now finds it difficult to ascend the hill with ease. It is my custom in these cases when there is any doubt to have the patient lean forward and touch the floor a certain number of times with his finger tips and watch the effect on the heart, or have him ascend two or three flights of steps rather rapidly to increase the action of the heart and note the effects. If there is any decided distress I do not advise the patient to walk rapidly, whereas in doubtful cases I often ask him to run up the stairs. In that way we can determine how much dyspnea or discomfort the patient has after exercise. Many of these patients do not have dyspnea after exercise but complain of other symptoms.

The breath holding test mentioned by Dr. Elmore is of considerable importance. As a rule patients with myocardial degeneration cannot

hold their breath for any length of time.

I want to say a word or two in regard to strophanthus. It is my impression that this is a drug which is very much more powerful than digitalis in its effect and consequently may be more dangerous, and the reason that not more serious symptoms are brought about by the use of strophanthus is due to the fact that it is not absorbed. I think that has been definitely proven. When one gives strophanthus he does not know just how much of the drug is going to be absorbed nor how much effect it is going to produce. After its full effect had been produced further absorption might cause the development of rather serious symptoms. For that reason I never give strophanthus, except strophanthin which is given in emergency cases where the patient has not been getting any digitalis and it is necessary to bring about a rapid effect upon the heart. By the injection of strophanthin intravenously this can be produced far more quickly than by any other method.

UNILATERAL VOCAL CORD PARALYSIS APPARENTLY DUE TO HYPERTROPHIED TONSILS.*

By JAMES ROYDEN PEABODY, Louisville. .

In March, 1927, a man aged twenty was referred to me by Dr. C. Thompson for examination on account of hoarseness and enlarged tonsils. The moment the patient spoke to me I realized that the trouble was of laryngeal origin and looked there for the cause of the hoarseness. Much to my surprise the left vocal cord was absolutely immovable and in the cadaveric position. On phonation the right vocal cord moved over until it practically overlapped the left. Of course I immediately thought of some injury to the recurrent laryngeal nerve. The patient's tonsils were greatly enlarged without any history of tonsillitis and he had decided he wanted them removed. I told him in my opinion the tonsil question could safely wait until we could determine what caused the vocal cord paralysis.

I called Dr. Thompson over the telephone and informed him of my findings, that the left vocal cord was paralyzed, and asked whether he was sure there was nothing pressing on the recurrent laryngeal nerve. I thought there might possibly be some pulmonary lesion or an aneurism that was causing the trouble, although the latter was unlikely because of the age of the patient.

According to the history: on February 22nd the boy contracted a cold and became hoarse. He was working on the government

dam and to make himself heard he had to strain his voice. This had continued for a week or two before he consulted Dr. Thompson. There were no constitutional symptoms whatever. After seeing him two or three times at intervals of five days, the boy continuing to work in the meantime, Dr. Thompson sent him to me. After the second examination, not finding anything to account for the nerve paralysis and not having seen any similar cases, I consulted text books. St. Clair Thompson in his new book states that in some cases ankylosis of the crico-arytenoid joint may be found as the cause of paralysis of the vocal cords. He says further that one can usually see some evidence of inflammation in ankylosis of the joint. I could discover no such evidence in the larynx, the vocal cords were not even reddened. The patient complained only of hoarseness, and at each visit he quite insisted that his tonsils be removed. I told Dr. Thompson about this and after consulting with the family they asked that Dr. Dabney see the patient. I sent him to Dr. Dabney who found the condition I have described and informed the patient that he could see no indication for tonsillectomy.

To make a long story short after having the patient under observation for three weeks, seeing him every four or five days, although the only symptom was hoarseness, I decided to perform tonsillectomy which was done on April 25th. The tonsils were greatly enlarged and the one on the side of the vocal cord paralysis was filled with cheesy material.

I then went to Georgia for a week and left the patient in the care of one of my friends. I saw him ten days afterward and the moment he came into the office I noticed he could talk better. I examined the larynx and found the left vocal cord moved, not normally or as complete as the right, but quite a perceptible movement.

I may say that Dr. J. J. Wynn, who is in the office with me, saw the patient both before and after the operation and was impressed by the remarkable change after the tonsils had been removed.

The patient was in the office yesterday and his phonation is practically perfect. Examination shows the larynx to be normal.

DISCUSSIONS

W. E. Gardner: In the case reported by Dr. Peabody, we must consider the possibility of toxic neuritis affecting the recurrent laryngeal nerve. However, we know that toxic-mono-neuritis is extremely rare, and if there has been a neuritis in this case, it appears to have been confined to the recurrent laryngeal nerve of one side as indicated by the temporary paralysis of only one of the vocal cords. I am inclined to believe that the tonsils were an etiological factor

*Read before the Louisville Medico-Chirurgical Society, May 27, 1927.

in the case, in spite of the fact that the type of neuritis is, to say the least, an atypical one.

Samuel G. Dabney: In my experience rheumatic affections of the crico-arytenoid joint are not so very unusual. The patient applies for advice saying he has pain in the throat, and slight tapping on the side of the larynx reveals a tender spot. As a rule the objective appearances are little if any deviating from the normal. I have seen a number of cases of that kind in which I made the diagnosis of rheumatic infection of the larynx.

It seems to me that St. Clair Thompson's work is the bible of the throat doctor. He says that sometimes there may be ankylosis of the crico-arythenoid joint without any objective appearance of disease excepting immobility, the diagnosis being made by excluding paralysis of the recurrent laryngeal, and yet I believe that in the great majority of cases ankylosis produced by inflammation of the joint would show some sign besides loss of motion. I would think there would be some redness, swelling or tenderness, but none of these symptoms were present in Dr. Peabody's case.

I was a little struck by Dr. Gardner's remark that perhaps toxic neuritis involving the recurrent laryngeal nerve might be responsible for the symptoms in the case reported by Dr. Peabody. All of us have seen ankylosis of the crico-arytenoid in severe inflammation of the larynx; it is not unusual.

In Dr. Peabody's case I did not say that I could see no objection to trying tonsillectomy, but I was skeptical as to its having any effect.

James Royden Peabody (in closing): In the case reported the vocal cords did not come together, the left one being immovable. I am not quite sure myself that tonsillectomy had anything to do with the improvement manifested by the patient. I tried to be conservative and had the patient under observation for three weeks before removing the tonsils, although he quite insisted upon the operation each time I saw him. On account of the condition of the river he was working only half time, and I concluded it was a good time to perform tonsillectomy which was really necessary anyway as the tonsils were greatly hypertrophied. Possibly there may have been some evidence of local inflammation about the larynx before the patient was seen by Dr. Dabney or myself.

Cerebral Hemorrhage as Complication of Quinsy.—Dupuy reports a case of double quinsy in which the patient developed a cerebral hemorrhage, which involved the right side of his face, the right arm completely, and the right leg partially. He was semiconscious for two weeks, and was in bed two and one-half months. Three years later the patient presented a typical picture of a postapoplectic attack.

A CASE OF ASTRAGALO-SCAPHOID DISLOCATION.*

By JAMES E. WINTER, Louisville.

Dislocations of the astragalus are of sufficient scarcity to warrant notice. The astragalus may be dislocated in any of its three articulations or may be dislocated in all three at once. The latter are exceedingly rare, only four cases having been reported. Dislocations of the astragalus are usually accompanied by a sprain-fracture and are produced by the same forces which usually produce a fracture of the lower ends of the tibia and fibula.

We will deal only with dislocations of the astragalo-scaphoid articulation. Baumgartner and Huguier (1907) collected 85 cases of dislocation of this articulation. In 48 cases the astragalus was dislocated medially, in 26 laterally, in 7 posteriorly, and in 4 anteriorly. In experiments on cadavers they found it was necessary to abduct the foot at right angles and also cut the interosseous ligament between the astragalus and scaphoid before the lesion could be produced.

They found that these dislocations were often difficult to reduce, in 60% of their series an open reduction being necessary. This they found due to two things:

1. Interposition of a portion of the annular ligament between the scaphoid and the head of the astragalus.
2. Engagement of the neck of the astragalus by the tendon of the tibialis anticus or posticus.

When open reduction cannot be accomplished astragalectomy is indicated. In a series of 23 cases where astragalectomy had been performed, 15 gave good function; 6 produced ankylosis; 1 required secondary amputation; 2 died from sepsis.

CASE REPORT.

W. D. R., aged 47. Patient was driving a team of horses when wagon wheel struck car-track, jolting him out of his seat and throwing him to the ground. Patient states he landed on his feet and at the same time twisted his body to prevent being struck by the wheel of his wagon. This case is from the service of Dr. Ashhurst of Episcopal Hospital, Philadelphia.

On admission half an hour later the internal and external malleoli were found in normal position. The anterior portion of the astragalus was very prominent and projected medially just below the internal malleolus. The astragalus was pushed medially on the scaphoid so that the whole anterior part of the foot including the scaphoid was pushed laterally for a distance of about 2 cm. There

*Read before the Jefferson County Medical Society.

was a marked depression on the medial side of the foot below the astragalus. There was no ecchymosis or swelling present. At this time the astragalus was mistaken for the internal malleolus and a diagnosis was made of dislocation of the ankle. A roentgenogram was made and the dislocation of the astragalus was recognized as such. It was unaccompanied by fracture. One attempt was made to reduce without anesthesia which was unsuccessful. Gas was then given and the dislocation was reduced upon the next attempt by extending and abducting the anterior portion of the foot, thus exaggerating the deformity and causing the astragalus to lip on the scaphoid, then abducting and dorsi-flexing the foot. A light gypsum splint, consisting of a posterior and a lateral splint, was applied and the foot dressed slightly in dorsi-flexion. Patient was admitted to the hospital but after two days insisted upon going home. He was



told to keep the splint on for ten days and then have a special shoe built up to support the arch.

This patient was seen in the End Result Clinic three months later by Dr. E. F. Crossin who found him to have full function and normal anatomy.

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DISCUSSIONS

J. Garland Sherrill: Dr. Winter has presented a very interesting report. I think it may be well to speak of the reasons why, following accidents such as he has described, a Potts fracture occurs in some instances, and in others a dislocation of one of the ankle bones.

Whenever an individual falls with the foot fixed and the force of the body moving, particularly to the outside with the foot underneath, there is a tendency to place great strain on both the external and internal malleolus, and the force may be sufficient to break the structures at either point. Usually a fracture will occur one or two inches above the external malleolus, a fracture at the inner edge of the articular surface, and perhaps the internal malleolus is also torn away, the ligament being stronger as a rule than the bone.

What occurs when there is a dislocation and not a fracture? If the foot is forcibly extended so there is greater strain on the ligament than on the bone, the astragalus may be forced forward and outward thus tearing the ligament whereas the bone may escape injury. Here the astragalus will carry the scaphoid away from the head of the astragalus. Normally the astragalus is a rather firmly fixed bone, there being a very strong ligament which binds the os calcis and the astragalus together. It is difficult to turn the bone outward unless a strong force is applied. However, when the leg is extended and the foot twisted the natural protection is lost.

Reduction of dislocated astragalus, as stated by Dr. Winter, is obtained by strong extension and abduction followed by flexion. As a rule this is best accomplished under a general anesthetic. In the olden days many cases of dislocation of the astragalus were treated by excision, because surgeons did not know how to handle them as we do today. More recently replacement has been accomplished by forced extension and abduction as explained by Dr. Winter with restoration of function and good results.

URINARY FREQUENCY IN THE FEMALE.*

By CLAUDE G. HOFFMAN, Louisville.

In discussing abnormal micturition in the female Gallant states that under normal conditions bladder capacity in the adult varies from eight to twenty ounces, and that the viscus empties itself three to six times in twenty-four hours. Within limits of health, however, the urine may vary widely in chemical constituents and in quantity excreted, and these factors modify the frequency of expulsion.

Urination is modified (a) as to the length of time between the acts, (b) as to the length of time associated with the act, (c) as to the effort necessary to perform the act, and (d) as to the unnatural sensations connected with the act. (Bryant).

The period between two acts of urination may be shortened by any influence, direct or reflex, that exaggerates the normal sensation which stimulates the bladder contraction. Any source of intravesical irritation,—urethritis, mental emotions, inflammation of the spinal cord chronic or acute, abdominal tumors, adhesions of pelvic viscera, injuries, disease, and operations upon the rectum, perineum or pelvic organs, changes in the quantity and quality of urine,—each and all induce undue excitability of the evacuating centers or, by modifying the capacity of the bladder, shorten the normal intervals between the acts. Excessive pain associated with urination, in urethritis and trigonitis, and especially when a caruncle is present at the external meatus,

*Read before the Jefferson County Medical Society.

will induce a patient to refrain from voluntary urination. Neurasthenic females feign inability to urinate from a morbid desire for catheterization. Fear, fright, severe mental emotion, and the stupor and relaxation following operations and shock may cause retention.

In an otherwise healthy female prolonged abstinence from urination, with overdistension of the bladder, will often provoke such a demand to urinate as to be wholly beyond control.

The hypersensitiveness of acute cystitis will frequently instigate such unduly active vesical contractions as to render the act imperative. While urgent micturition frequently accompanies cystitis, it more commonly arises from causes indirectly connected with the bladder, such as polyuria, irritating urine, and moderate overdistension from neglect or preoccupation. It may also result from mental impressions, such as those caused by running water, fright, cold, etc., all of which may excite reflex contraction of the viscus.

The normal filling and emptying of the bladder is permitted by alternating action of two antagonistic muscles, the sphincter vesicæ and the detrusor urinæ (Adler), that is by the contraction of one and relaxation of the other. Under normal conditions as the bladder fills the sphincter offers resistance to the escape of urine thus preventing overflow.

Any one of a long list of causative factors may operate in the production of urinary frequency in the female. Among them the following will be briefly discussed:

- (1) Cystitis, acute and chronic,
- (2) Intravesical irritation,
- (3) Urethral stenosis,
- (4) Urethral caruncles,
- (5) Calculi and foreign bodies,
- (6) Urethritis,
- (7) Trigonitis,
- (8) Ureteritis,
- (9) Pyelitis,
- (10) Polyuria,
- (11) Tuberculosis,
- (12) Syphilis,
- (13) Pregnancy,
- (14) Traumatic injuries,
- (15) Abdominal tumors,
- (16) Post-operative adhesions,
- (17) Uterine malpositions,
- (18) Pelvic and rectal diseases,
- (19) Urinary alterations,
- (20) Nervous and spinal cord diseases,
- (21) Mental emotions,
- (22) So-called "habit bladder", and "exclusive ulcer,"
- (23) Frequency of undetermined origin.

It was the custom among older practitioners of medicine to attribute urinary frequency to

cystitis, and to treat the patient by the internal administration of drugs. It was not considered necessary to examine the bladder to determine the presence or absence of pathology. The diagnosis was based upon the subjective findings alone. Under such circumstances it is a source of no wonderment to us that chronic cystitis was formerly such a common complaint among females.

Since the advent of scientific urological study and the perfection of modern mechanical and laboratory methods of investigation,—including the urethroscope, cystoscope, roentgen-ray, ureteral catheter, renal function estimations, refinements in urinary and cultural tests, etc.—there is no longer an excuse for the diagnosis of cystitis without determining the underlying cause. Moreover, it is now well understood that cystitis is usually a secondary rather than a primary clinical manifestation, and that urinary frequency may owe its origin to many other related or unrelated factors.

What has been said concerning urinary frequency in cystitis may as well be applied to transient or intermittent intravesical irritation. This is often seen in females just prior to menstruation and early in pregnancy, and was also formerly diagnosed as a mild or low-grade cystitis. Intravesical irritation may be produced by numerous other causes, including urinary alterations to be mentioned later.

Urethral strictures and caruncles are common causes of dysuria and frequency in the female. In this group, also, without local examination the diagnosis of cystitis has often been made by the attending physician and the patient treated without benefit for weeks or months before being referred to the urologist for determination of the cause. Urethral stricture is more frequent in females than we have hitherto believed.

While vesical and urethral calculi are rare in the female, this does not apply to other types of foreign bodies introduced by intent or accident from without by the patient. Whatever the nature of the foreign body, the first indication of its presence is irritation of the vesical mucosa, second urinary frequency, and third inflammatory reaction and pain. The reasons for the introduction of foreign bodies into the human bladder cannot be discussed in this paper.

Urethritis in the female may be due to Neisserian infection, or more rarely infection from catheter introduction to relieve overdistension. Gonococcic urethritis in young females is more common than the most of us are willing to admit. The cardinal symptoms are dysuria, burning and frequency. The trigone is involved in a small percentage of instances.

Mild trigonitis or trigonal congestion, particularly at or near the menstrual period, is

responsible for urinary frequency in quite a large group of cases. This is seen principally in young women whose occupations require constant standing positions. Neglect of urination and consequent overdistension with highly concentrated urine is a common cause of this type of trigonitis. Urinary frequency subsides after rest in bed and cessation of the menstrual flow, but may recur at subsequent periods.

Ureteritis and pyelitis sometimes produce sufficient intravesical irritation to create a frequent desire to urinate. Polyuria is usually more apparent than real. Because of the imperative demand for frequent urination, it is assumed the quantity is increased, whereas the converse may be true. Moreover, when the quantity of urine is unusually abundant it is ordinarily non-irritating in character.

Urinary frequency is one of the commonest symptoms in tuberculosis of the bladder. Vesical tuberculosis, however, is now believed to always be secondary to a primary focus in some other portion of the body.

Syphilis of the bladder is usually among the later manifestations of the disease, but may be noted in the early secondary stage. Urinary frequency is a constant symptom of vesical lues. The so-called tabetic or "cord bladder," with its manifold symptoms, is a familiar picture to many of us.

Urinary frequency in pregnancy occurs during the first few months due to irritation from disturbed anatomic relations as the uterus ascends. It may recur toward the close of gestation from downward pressure of the gravid uterus. Frequency subsequent to delivery may arise from vesical infection the result of catheter introduction.

In traumatic vesical injuries urinary frequency and urgency are the initial and most prominent signs. If serious damage has been inflicted hematuria is also present. When intraperitoneal rupture of the bladder has occurred, no urine may be voided although the urgent desire to urinate is constantly present.

Pressure from abdominal tumors of any type, traction from adhesions of pelvic viscera post-operative or otherwise, and also uterine malpositions, may cause vesical irritation and urinary frequency owing to disturbed anatomic relations. Downward pressure of a fibroma involving the lower uterine segment is a common cause. Traction upon the uterovesical ligaments from a retroflexed uterus and pressure upon the bladder or urethra in ante-flexion and prolapse may be sufficient to produce marked vesical disturbances and urinary frequency.

During diseases and following surgical operations upon the pelvic organs, perineum and rectum, urinary frequency may result direct-

ly, indirectly or reflexly. However, temporary retention after operations is more common than frequency of urination.

Urinary frequency may be due to alterations in composition of the urine. Intensely acid urine such as seen in systemic dehydration because of insufficient fluid intake often causes urinary frequency. Strongly alkaline urine is also irritating to the vesical mucosa and urinary frequency is the logical result.

Inflammatory and degenerative affections of the spinal cord may produce strange disturbances in bladder function and control. Lesions involving the central nervous system and also the terminal nerve supply may cause urinary frequency and other manifestations. So-called "cord bladder," atonic bladder, sensory phenomena, relaxation of the sphincter, trabeculations, etc. have been described.

It is well known that in persons enjoying normal health, emotional states greatly influence bladder function. Fear, fright, laughing, weeping, sneezing, etc. may occasion an imperative desire to empty the bladder, and if urination be neglected involuntary escape of urine is usually unavoidable. The occurrence of urinary frequency in persons suffering from neurotic, hysterical and emotional states is well known.

The so-called "habit bladder" has recently been described, in which transient urinary frequency, urgency, burning and tenesmus are noted. It is seen principally in unmarried women and is probably due to trigonal congestion although other causes have been assigned. Several additional types of "habit bladder" mentioned are of no interest so far as this paper is concerned. The elusive ulcer (Hunner) is often the cause of urinary frequency.

There remains a final group, comprising about twenty per cent of patients with urinary frequency coming under my personal observation, in which the cause cannot be demonstrated by clinical examination, cystoscopy, or otherwise. Repeated analyses reveal no urinary abnormality. The only symptoms of which the patients complain are the discomforts and annoyances incident to frequency of urination. In this group I have found no pathology corresponding with the clinical symptoms. The following case is fairly representative of this group.

Mrs. E. F., aged thirty-six, otherwise healthy, at frequent intervals had urinary frequency and slight tenesmus persisting four or five days at a time. She had been married fifteen years and had borne two children. Her pelvic organs were normal. The menopause occurred two years previously. She had been repeatedly examined by internists, neurologists and other specialists and no abnormality

discovered. I had examined her cystoscopically on several occasions but could find nothing to account for the symptoms of which she complained. The bladder was normal and the blood and spinal fluid Wassermann reaction negative. On ureteral catheterization the urine from both kidneys was normal and cultures proved negative.

Five years ago this patient visited an eastern urologist who made the diagnosis of bilateral ureteral stricture. After several "dilations" she was dismissed from the hospital as "cured",—but she was only temporarily "relieved."

In none of my examinations was there any obstruction found in either ureter, a No. 6 catheter being easily introduced. The patient was not hypersensitive to instrumentation.

In several instances urethral stenosis, overlooked by those who had previously examined and treated the patients, accounted for the dysuria, frequency and tenesmus present. Prompt subsidence of symptoms followed dilatation of the strictures. In these cases, also, the urine was negative and no other pathology existed anywhere in the urogenital tract. The appended case history illustrates the point I wish to emphasize:

Mrs. M. T., aged fifty-eight, had complained of exacerbations of severe tenesmus which required the administration of opiates, and also urinary frequency, four or five times a year extending over a period of eighteen years. Her urine had been repeatedly examined with negative results. Her blood and spinal fluid Wassermann reaction was also negative. She had been treated in the usual way by internal medication by different internists, with subsidence of symptoms for two or three weeks, but recurrence invariably ensued.

When the patient came under my observation, which was during the last attack, she had been suffering constantly for three months. She was very sensitive to instrumentation, in fact slight urethral dilatation was necessary before the cystoscope could be introduced. No vesical pathology was discovered except slight trabeculation. Two days after cystoscopy, when she returned for observation, all the clinical symptoms had subsided.

In this case I am certain the symptoms were due to the slight urethral stenosis. The urethra was dilated on five or six occasions and there has been no recurrence of symptoms. Three years have now elapsed and the patient has remained perfectly well.

In a number of cases, three of which came under my observation within the last year, urinary frequency had existed for periods ranging from one to three years. The causative factor was found to be urethral caruncles

just within the meatus urinarius which had been overlooked in previous examinations. No other abnormality was discovered, and the symptoms promptly subsided following removal of the caruncles.

Patients with disease of the pelvic organs often have exacerbations of urinary frequency, although the urine is perfectly normal. One may be completely at sea even after cystoscopic examination, since no vesical, urethral, ureteral or renal pathology can be discovered. In such cases urinary frequency may be due to mechanical pressure from one of the pelvic organs. The subjoined case illustrates this point:

Mrs. D. O., aged forty, mother of three children, had been treated three months by a southern gynecologist for cystitis. The patient came to Louisville and was referred to me for continuation of the treatment. She complained of pain, urinary frequency and tenesmus.

Examination disclosed prolapse of the uterus with pressure on the urethra. No other pathology was found. The urine was practically normal, and the Wassermann reaction negative. She was operated upon by a local surgeon for the uterine prolapse and has had no further urinary symptoms.

DISCUSSIONS

Irvin Abell: I cannot add anything of value to what Dr. Hoffman has given us in his paper concerning the urinary frequency of women. His comprehensive review of the various conditions, both constitutional and local, involving the genito-urinary tract and adjacent structures is so complete that it brings to mind quite forcibly the necessity of an extremely careful and painstaking examination to determine the cause of urinary frequency.

As to treatment: This must depend entirely upon the diagnosis and determination of the causative factors. Unless one is so situated that the various procedures Dr. Hoffman has outlined can be undertaken, it is quite probable that the diagnosis may be entirely missed, and yet few of the body systems permit of such thorough study as does the female urogenital tract and as I see it the most important deduction to be drawn from Dr. Hoffman's paper is that with proper study a correct diagnosis can be reached in 80% of such cases.

I was greatly interested in the group of cases he mentioned, comprising 15 to 20 per cent of those coming under his observation, in which he was unable to determine the cause of the urinary symptoms. That is the class we have been accustomed to designate as neurotic, that is to say when we cannot ascertain the actual cause of the urinary frequency we have been in the habit of placing this designation upon them.

Certainly it is true that in some cases women

who, from a physical examination, are absolutely normal suffer intensely from urinary frequency, and in my own experience it has been difficult to offer them much relief. I would like for Dr. Gardner to tell us his impressions and what treatment he would recommend in that particular group.

I certainly appreciated the most excellent paper the essayist presented and wish to thank him for it.

Stephen C. McCoy: I appreciate the excellent paper Dr. Hoffman has given us. Urinary frequency is a common complaint among women, and not infrequently the cause lies outside the genito-urinary tract.

Bugbee, in 1916, reported before the American Medical Association one thousand cases of urinary frequency in females of all ages, and tabulated the causative factors. The greatest number occurred between the ages of twenty and thirty years, and urethritis and trigonitis were among the most frequent causes.

As the essayist has stated, the determination of a definite causative factor of urinary frequency is sometimes a difficult problem. Where lesions exist in the lower urinary tract, they may be readily discovered under direct vision with the urethroscope or cystoscope; and the urethral catheter is of great assistance in determining the presence of lesions in the upper urinary tract that might be the cause of urinary frequency. There will still remain, however, as Dr. Hoffman has shown, a certain group in which no definite cause for the frequency can be discovered. In that type a competent neurologist should be called to examine the patient. Quite often extremely nervous or so-called neurotic women complain of urinary frequency, where careful urological examination discloses no pathology. The neurologist would, it seems to me, be able to render valuable assistance in such cases.

I want to thank Dr. Hoffman for the concise manner in which he presented the subject.

John T. Bate: I have enjoyed the comprehensive paper of Dr. Hoffman. One other cause of urinary frequency in women might be added, i. e., the presence of a suburethral abscess or infected diverticulum. When seen the patient has usually been treated for an irritable bladder for years. When the pouch is filled with pus, it can be felt as a "cushiony" thickening between the urethra and the vaginal wall. Pus can be expressed from the urethra, although there are no evidences of acute urethritis. A catheterized specimen of urine may contain no pus. If the sac is empty the opening into the urethra must be discovered by urethroscopic examination.

These abscesses are usually lined with epithelium and are to be distinguished from small acute abscesses in the lacunae of Morgagni.

Frank T. Fort: Dr. Hoffman has given us a very practical paper. Frequency of urination is

something with which any one in the practice of medicine may be confronted at any time. The subject is therefore interesting to the internist, the surgeon, the neurologist, the pediatrician, etc., as any of us are likely to encounter such cases occasionally. There are so many phases of this subject that it is not surprising Dr. Hoffman should find 10 to 20 per cent of cases that had to be classified as idiopathic. Neurotic women especially often complain of distressing urinary frequency for which no definite cause can be found.

I have no doubt that diet plays some part in the production of urinary frequency. I do not recall that Dr. Hoffman mentioned this feature in his paper. When no other cause is disclosed by careful investigation, I believe placing the patient on a strict dietary regime might be beneficial.

I have recently had under observation three patients, each of whom had a small subserous or interstitial uterine fibroma which pressed upon the urinary bladder and caused an annoying frequency of urination. The cause had been unrecognized by one or two other physicians who had previously examined the patients. The symptoms subsided after enucleation of the tumor or hysterectomy.

Urethral caruncle, as stated by the essayist, causes distressing urinary symptoms, and the same is true of a small urethral abscess, stricture, or erosion. In some cases urinary frequency is purely hysterical in origin. Uterine malposition, pelvic adhesions and injuries are frequent causes. Slight pelvic injury may cause reflex irritation accompanied by urinary frequency. In many instances I believe the cause is reflex rather than direct.

W. Edgar Fallis: I want to express my appreciation of Dr. Hoffman's splendid paper. The subject of urinary frequency is especially interesting to gynecologists. It is my opinion that in many of the cases classified as idiopathic the cause of the urinary frequency can be determined by careful examination of the genitalia, especially in women who have sustained more or less laceration of the soft tissues during childbirth. I have often seen women who complained of vesical symptoms following labor where there was apparently no external evidence of laceration, yet examination disclosed a definite uterine prolapse with pressure upon the bladder. If the patient has a neurotic tendency, no one can estimate how much damage may be done nor how often urination may become necessary in consequence of a comparatively slight laceration and the irritation thus produced in this particular type of patient.

Guy P. Grigsby: I simply want to emphasize what Dr. Fallis has said. He has expressed my views exactly and in a much better way than I could have done.

On two occasions quite recently I have encountered patients with small cystoceles and moderate uterine prolapse who complained of distressing urinary frequency. After exhausting all other means of arriving at the cause, repair of the cystoceles afforded complete relief.

There is one other class of cases about which I wish the essayist would speak in closing, that is patients with leakage of urine, or involuntary urination when the individual coughs or sneezes. This type of leakage is not dependent upon the amount of urine present in the vesical cavity at the time. I have seen two or three such cases recently in which no cause whatever could be discovered, either from a neurological viewpoint or investigation of the genito-urinary tract. In one instance relief was obtained by a simple operation devised by Dr. Howard Kelly, that is plicating the internal sphincter. It is a simple procedure and produced complete relief in this case.

Oscar O. Miller: Fortunately the average case of pulmonary tuberculosis is not complicated by tuberculosis of the kidney and urinary frequency. Usually by the time I see the patient unilateral nephrectomy has already been performed and he is suffering from vesical tuberculosis with the attendant distressing symptoms. In such cases we have secured some favorable results by tuberculin injections, rest, routine care, and heliotherapy. They are tedious cases of long duration and improvement is ordinarily slow. Recently we have been administering strychnine in 1-30th grain doses in a case of this type.

Women with tuberculosis, and a weakened sphincter, frequently have urinary incontinence during the act of coughing. Such cases are rather distressing and relief cannot be obtained by the administration of urinary antiseptics or other drugs.

W. E. Gardner: In regard to the neurological aspects of urinary frequency in women I still believe there will be found a considerable number of patients in whom the urinary symptoms must be considered of neurotic origin. In such cases the most painstaking examination by internists and urologists has revealed no pathology about the urogenital tract to account for the symptoms. The fact that the urinary frequency is so frequently relieved by the administration of small doses of the bromides is further evidence tending to show the neurotic origin. These neurotic individuals are very sensitive and highly susceptible to slight irritation particularly about the urogenital tract. I think in a certain number of cases, where surgeons and urologists can find no pathological cause for the symptoms, we will still have to consider them as being of neurotic origin.

Claude G. Hoffman (in closing): I thank the gentlemen for their liberal discussion of my paper. The subject of urinary frequency in women

is so extensive, and the causative factors so numerous, that the details of every phase could not be considered in a short paper.

The most important point to be emphasized is: that in the greater proportion of cases the cause of urinary frequency can be found if diligently sought. Not many years ago it was thought the cause of certain cases of hematuria could not be determined. We now realize this was merely a confession of our ignorance. The same statement will apply to urinary frequency: careful search will in almost every case reveal the cause.

One patient mentioned in the paper had complained of urinary frequency at intervals for eighteen years; she had been examined by many physicians who discovered no cause for the symptoms; she had been treated by the administration of various drugs without permanent relief. When she returned two days after the first cystoscopy the symptoms had entirely disappeared. I have seen many other patients with urinary frequency due to slight degrees of urethral stenosis, and after this had been properly treated the symptoms subsided.

Many of the simple things are overlooked in examination of the patient. Most women with urinary frequency first apply to the family physician for advice. Without investigation he concludes the symptoms are due to cystitis, or that the patient is a neurotic, and prescribes accordingly. No relief being obtained the woman then consults another physician and the procedure is repeated. The cause of the symptoms remains undiscovered until long afterward when the patient reaches the urologist and is carefully examined with urethroscope, cystoscope, etc.

Another patient mentioned in the paper had been treated several months by a prominent gynecologist in the south for cystitis. She complained of pain, urinary frequency and tenesmus. Examination disclosed prolapse of the uterus. Cystoscopically the only pathology was mild trigonitis. The patient was referred to a Louisville surgeon who operated for the uterine prolapse following which the urinary symptoms subsided.

Referring to the remarks of Dr. Grigsby: I confess that I do not know what causes the involuntary discharge of urine during paroxysms of coughing, sneezing, etc. I have encountered quite a number of cases of that type, and as no definite cause could be discovered, I have classed them in the neurotic group.

Dr. Fallis spoke of lacerations during childbirth as a cause of urinary frequency: His point is excellent and emphasizes the fact that there should be closer co-operation between the gynecologist and urologist. Some of the women I have seen with urinary frequency had laceration of the entire pelvic floor. After proper surgical repair the urinary symptoms subsided. I have seen multiparous women over forty-five, i.

e., passed the menopause, who had no control over their urinary apparatus. These cases I attributed to general muscular relaxation following injuries to the soft tissues during childbirth.

INFECTIONS OF THE HAND.*

By IRA N. KERNS, Louisville.

At the present time there is probably no subject which is attracting more attention, both from the medical profession and the laity, than that of industrial surgery. Many new books have been published upon this subject, many compensation laws for the working man have been enacted, and all larger industrial plants have been reorganized to meet the new conditions. I therefore would call your attention to one frequent and very important injury, with which we are all brought constantly in touch, namely, infections of the hand.

Infections of the hand are seen in all walks of life, from the richest to the poorest, in private life as well as industrial, by the general practitioner and the surgeon. Inasmuch as the hand is one of the principal members of the body, the resulting disabilities, both temporary and permanent, are often of a far-reaching character, on account of contracted tendons, ankylosed joints, etc., as well as the general depleted conditions of the patient from having been through, very oftentimes, a severe general infection, if he has been fortunate enough to escape death.

Causative Factors: All forms of trauma play a part in this condition from the simplest pin-scratch to the most crushing injuries, abrasions, lacerations, punctures, penetrating wounds, etc. These represent the general ways of infections. The principal factor in most cases is neglect. The patient suffers some trivial injury, no attention is paid to it on account of its supposed trifling nature, and in many cases we have some of our severest infections established to a high degree when the patient is first seen. It is a well known fact that deeper, longer and more gaping wounds that bleed freely are far less likely to cause infection than the preceding. Bruising alone without breaking of the skin is responsible for a small group of cases. Certain occupations predispose to rapid and severe infections on account of the hands being exposed to infectious material. The infection may lead to palmar abscesses with extension into the arm, with generalized conditions such as lymphangitis, general sepsis, metastatic rheumatism, osteomyelitis, endocarditis, and many other complications. In the more serious cases which are seen at the time of

the accident, these possible complications are anticipated to a great degree by the proper methods of first attention, and to a great extent the writer is safe in saying that the danger of severe complications varies in an inverse ratio with respect to the injury, in other words, the more serious the injury the quicker the first attention.

The principal infecting organisms are the staphylococci, streptococci and anaerobic groups with their variations.

Anatomy and Pathology: In considering the anatomy and pathology of infections of the hand, pus may give rise to superficial and deep infections. Under superficial infections are grouped the felon, infections of the connective tissue closed space that forms the tip of the front of the fingers, paronychia, or "run around", infection of the epithelial space at the sides or base of the nail, subepithelial abscess, a purulent collection usually at the finger tips, carbuncles, etc.

Deep Infections: Lymphangitis, tenosynovitis, fascial space infections, of which there are six well defined spaces capable of harboring pus, dorsal subcutaneous, an extensive area over the extensors over the back of the hand. Dorsal aponeurotic, shaped like a cone with the small end at the wrist and the broad end at the knuckles and lying between the extensor tendon and the metacarpals. Hypothenar, localized on the ulnar and pus here tends to come to the surface. Thenar, on the radial side of the middle metacarpal lying deeply in the palm and just over the abductor muscle. Middle palmar, between the metacarpals and deep flexor tendons reaching from the middle metacarpal and overlapped by the ulnar bursa and separated from the thenar space by a firm partition except at the proximal end, where a small isthmus leads under the tendons and ulnar bursa into the forearm. Web space, subcutaneous at the web of the palm with prolongation into the lateral margins of the fingers.

Prophylaxis and Treatment: It is a rather safe plan to regard all wounds of the hand from any source as infected and attempt to obtain the best conditions possible for healing. For antiseptic purposes iodine probably ranks first as the oldest general first aid agent, although there are other agents such as dichloramin T, mercurochrome and several others developed during and since the late war which have their adherents. The cutting away of devitalized tissues as much as possible from the crushing wounds together with the cleansing of the field with antiseptics and approximation, or leaving open, as the case may be. Antitetanic serum as indicated.

Adequate drainage, when needed, as in punctured wounds; for the gaping wounds

*Read before the Jefferson County Medical Society.

cleansing and approximations. Many of these cases at the first dressing are seen in an active state of infection, when it becomes a question of abscess formation, with or without general infection.

Localization of abscesses, incision and drainage with irrigation by one of the chlorine preparations moist heat, soaking the part continuously in hot water, give relief in a great many cases. The writer has designed for his own use a very simple and inexpensive way to obtain continuous heat, namely, putting an electric hot plate under the ordinary arm bath in general hospital use. It is very easy for the patient to regulate the temperature of the water with the ordinary socket switch as a control. Passive motion of the parts where indicated in order to obviate as much as possible a stiff joint, etc. Symptomatic treatment of systemic disturbances; a good nourishing diet is also an essential. For the blood stream infections which very often complicate, the serums have been found of very considerable value along with the mercury preparations and the anilines administered intravenously.

Complications and Sequelae: Under this heading from the series of infections we find contracted tendons, stiffened joints of all degrees, articular rheumatism, endocarditis, and many other complications which call for special attention, many patients being left with some permanent disability from what at the outset appeared to be some trivial injury, and very often taxing one's ingenuity to the utmost to obtain satisfactory results.

Results: Under this heading, while many a case has resulted in permanent injuries of all degrees from these infections, and it becomes a question of the amount of compensation to which the patient may be entitled at the hand of the various compensation boards, it is surprising to note what has been accomplished with modern methods, such as exercise, passive movements, the breaking up and manipulations of stiff joints and re-education of the affected member, together with the use of diathermy, heat in various forms including ultraviolet, faradic current, etc., as the case may require, and to a great degree the amount of disability varies with the perseverance and co-operation of the patient.

DISCUSSIONS

John R. Wathen: Dr. Kerns has given us a very timely and practical paper. It is especially interesting to a society of this kind, because many of us engaged in general surgical practice do not often come in contact with the conditions he has described.

I would like to emphasize a few points the essay has made. Infections of the hand are of much greater importance than we formerly believed. Quite recently a prominent eastern sur-

geon published an article on industrial surgery, and I was surprised at the mortality of hand infections as shown by his statistics. By handling the situation along the lines suggested by Dr. Kerns, the mortality from hand infections in the future will be greatly reduced, resulting deformities will be minimized, and a lesser number of cases will have to be considered by the compensation boards.

People are beginning to realize, as Dr. Kerns has well said, that the dangers of hand infections are in direct proportion to the time the surgeon sees them. Severe injuries of the hand receive prompt attention, and such cases seldom become infected, because there is an open wound which bleeds freely and proper local antiseptic treatment can be applied. The most dangerous type of hand injury is the so-called trivial wound, often so insignificant that first attention measures are neglected or considered unnecessary. Infection of the wound later occurs and the results are sometimes disastrous. While it is true we are better prepared than we formerly were to handle all kinds of traumatic injuries, industrial and otherwise, people should be educated to apply to the surgeon promptly whether the injury be serious or trivial, and this is particularly important in wounds of the hand.

Small punctured wounds of the hand, and especially involving the palm, should always be given prompt attention. Such cases may become very serious if infection occurs. In all punctured wounds I believe we should use novocaine more frequently than has been our custom. Under local anesthesia we can elevate the injured area with small forceps, then with a sharp knife dissect away the damaged tissue and apply a suitable antiseptic, leaving the wound open to heal from the bottom. By following this plan of management I believe the number of infections would be greatly reduced. The older plan of treatment was simply to make local applications to the surface and await results. We have long since learned the fallacy of such measures. We must dissect away the injured tissue and then apply antiseptic treatment. Novocaine offers a splendid means to accomplish this, and we can also apply tincture of iodine without discomfort to the patient.

When people engaged in industrial pursuits are made to realize the advantages of early treatment of hand injuries, the frequency of infection will be reduced and the mortality from this cause will change from high to low.

George A. Hendon: Dr. Kerns has introduced a very important subject. Hand injuries and infections have not heretofore been accorded the consideration they deserve.

In wounds of the palm of the hand it is best, in my opinion, to avoid suturing altogether. The wound should be approximated and dressed without suture.

In incised and lacerated wounds of the hand, and more especially of the palmar surface, the wound should be left open for drainage, the hand immersed in warm water, the water being frequently changed, no effort being made to approximate the wound until one is convinced that contamination has been reduced to the point where it will not cause infection.

In extensive wounds of the hand the use of the little finger as a graft is the most advantageous plan because the individual can get along very well without the little finger. After removal of the bone a wide skin flap can be brought downward over the wound and healing rapidly occurs. In various gunshot wounds of the hand skin grafting is often advisable.

It is a matter of universal knowledge that infected wounds, of the thumb and little finger are attended by the greatest danger, because infection involving the tendon sheaths of these fingers is more likely to progress downward into the palm of the hand and produce palmar abscess which is one of the most disabling and persistent lesions we have and so frequently results in loss of function of the hand. It is always a confession of inadequacy of the surgical procedure to use drainage, i. e., to make an opening and insert gauze, rubber or any other drainage material. Whenever you do that you confess that you have not made your incision sufficiently extensive, that you have not completely uncovered the infected areas. Careful dissection should be made, as suggested by Dr. Wathen, avoiding injury to the tendon sheath, leaving the wound open to heal from the bottom. If infection involves the tendon sheath it is quite likely to extend to the joint. It is always advisable to leave the wound open after extensive operation on the hand. Usually infection extends from the hand to the fingers, sometimes upward along the arm, in other cases in both directions.

If wounds of the palmar surface are kept open and the hand immersed in warm water, the wound being left open for drainage, this will nearly always bring about the desired results.

J. Garland Sherrill: One of the earliest favorable comments I ever received was concerning a brief paper giving some advice on the treatment of local injuries of the hand. I do not know that I would give the same advice today as I did then. In those days I found that a very good plan of treatment was to cleanse the wound, remove foreign particles, applying proper dressing around the digits, etc., and use compound tincture of benzoin. Comments on this publication were received from all over the world, showing that hand injuries were considered important by all authorities.

I would not now advise the benzoin treatment, but have found that these wounds kept dry and sealed to prevent bacterial growth get well. Some of these wounds left open heal nicely after

cleansing.

My opinion is we ought to preserve every particle of tissue about the hand possible. The tissue can in some cases be trimmed afterward to better advantage than at the time of the primary injury. The main thing is not only to cleanse the wound itself but also the tissue around it. I believe in the majority of instances better results can be secured by the dry method of treatment than by the moist. In some cases where infection is marked it is necessary to change from the moist to the dry plan of treatment. After the wound is dressed if it is painful, one should always investigate. The reason for pain is that infectious material causes extreme irritation to the nerve endings. A clean wound properly dressed should not be painful. The large blood supply and the presence of filth and dirt are the things that make wounds of the hand painful.

In my opinion every patient with a contused, lacerated or punctured wound of the hand should immediately be given 1500 units of antitetanic serum. The value of this was so well proven by results during the war that no surgeon should take the responsibility of treating wounds of the hand without administering antitetanic serum. We cannot afford to take the risk of the patient developing tetanus. I have seen a few patients with developed tetanus get well under vigorous treatment, and have seen a number of others who did not get well. I have never regretted giving the patient antitetanic serum in the presence of minor wounds.

The managers of manufacturing plants, employing many men who work around machinery, do not seem to appreciate the dangers of hand injuries. They should be instructed in the proper care of their employes in case of injury to prevent infection and later deformity. However, the plants represented by Dr. Kerns do take proper care of their men. It is important that men be not worked overtime in factories and manufacturing plants. When a man is overworked he is less apt to keep his hands out of machinery. We should attempt to prevent accidents and not confine our efforts entirely to the treatment of such wounds.

Dr. Kerns has presented in a brief and concise way almost the entire chapter on minor injuries, and it is a very serious chapter because nearly every man depends on his hands for his livelihood and they should be kept in good condition. As has been stated wounds of the little finger and thumb are most important because of the danger of infection extending to the wrist. If infection extends to the wrist one should not hesitate to incise the arm widely in order to prevent further extension.

In injuries of the hand try to prevent infection. Bacteria cannot grow in a dry wound, there must be a certain amount of moisture for

their propagation.

Infected wounds are best treated by wide incision and drainage.

Orville R. Miller: One point which deserves greater emphasis than it has received in the discussion of Dr. Kerns' papers is that after a wound of the hand has healed the patient should be treated by active motion and even after that some form of apparatus may be required to prevent deformity. In early cases where infection does not occur it may be safe to dismiss the patient as soon as the wound has healed. However, I have seen patients with considerable contraction of the fingers and wrist due to the fact that as soon as the wound had healed they were dismissed and afterward the tendons became contracted. Such results often occurred following the treatment of war injuries, adhesions occurring between the tendons or tissues in the palm of the hand. During my service in the army I was fortunate enough to be associated with the surgeon who had charge of this class of work. Many plans were tried but seldom was it possible to secure a functioning tendon of the hand after serious damage. Under such circumstances the hand should be placed in such position that it will be most useful. In many instances it was necessary for the patient to wear some kind of apparatus after the wound had healed to secure the best results.

As to the administration of antitetanic serum as a precautionary measure after injuries: Not long ago I saw an unfortunate case in consultation with a local physician where a dose of antitetanic serum was given and the patient died ten days afterward. I have since wondered whether or not it would be proper to give more than one dose. I recall that a surgeon in the British army administered one dose of tetanus antitoxin to a soldier who had been shot. This was given prior to operation for the injury. The soldier later developed tetanus and died.

O. R. Reesor: In all injuries of the hand, or any other portion of the body for that matter, exposure to sunlight is an important feature of the treatment. Unfortunately the sun's rays are not always available, but we have the next best thing in the quartz lamp. This intensifies the heat practically the same as that which we get directly from the sun. In all injuries of the hand, whether seen immediately or after they have become infected, it has been my routine practice for several years to use the alpine sunlight treatment, and in doing so the incidence of infection has been reduced at least fifty per cent. The best results have been secured where the patient was seen and treated soon after the injury. Even after infection has resulted application of the alpine sunlight will markedly reduce the period of infection. In serious hand infections free incision followed by three to seven minutes application of the alpine sunlight will reduce

the time of infection by one-half. I believe this method of treatment also prevents or lessens the tendency to adhesions of the tissues and subsequent deformity with diminished function.

The administration of antitetanic serum following injury is something we should not overlook. Those of you who have ever had any experience with tetanus are not likely to forget it. I have had the misfortune to see two such patients, one died and the other recovered, a mortality of fifty per cent. The last patient was saved. However, he had a well-developed case of tetanus. I do not believe we are justified in treating accidental injuries, lacerated and punctured wounds, etc., without administering antitetanic serum, because the danger is too great. Practically ninety per cent of these injuries are among the working class of people, employes in factories, manufacturing plants and elsewhere, who are naturally not sterile when they are injured, and necessarily we must take greater precautions among that class than we would in the better class of patients.

W. F. Stucky: I would like to ask a question: Is the old-fashioned remedy which we were supposed to use years ago, viz., balsam of Peru and castor oil, now regarded of any value in treating injuries of the hand? My reason for asking this is an experience I had two months ago. A young man from Iowa who was here on a visit had sustained an injury to four of his fingers in a printing press six days before he came here, and his father, who is a physician, had dressed the wounds with balsam of Peru and castor oil. I was asked to examine and redress the hand. I was so surprised and pleased at the progress the wounds of the fingers had made that I continued the dressing, although it had been a long time since I had used balsam of Peru and castor oil.

I would like to know whether this plan of treatment is employed these days or whether it has been supplanted by more modern methods.

Virgil E. Simpson: In regard to administering a second dose of antitetanic serum: There is no danger of protein sensitization occurring from the second dose of antitetanic serum when administered as a sequence to the first within ten days interval. It is only after a foreign protein has been introduced into the blood stream and sufficient time has elapsed for the cell ferments to develop great activity and thus enable them when the second dose is introduced to digest toxic molecules so rapidly that symptoms develop. There is no danger of anaphylaxis occurring when one dose of antitetanic serum is given when the patient is first seen and then in three days or five days a second dose is introduced. There is danger of anaphylaxis if the patient is wounded say on the fourth day of this month and antitetanic serum is given, and then he receives another wound on the fourth day of

next month or the month following necessitating the administration of antitetanic serum again. So it is always wise for the surgeon to make inquiry of the patient as to whether or not he has recently been injured and if antitetanic serum has been introduced. After that precaution is taken he then can avail himself of such means as we possess which are not so highly satisfactory and yet reasonably so of desensitizing the patient before he administers antitetanic serum. If the patient does develop tetanus following the injury and also following the administration of antitetanic serum it is no discredit to the general procedure of the administration of antitetanic serum for the prevention of tetanus. It simply means in that particular case there was a virulent type of organism, or the organism was planted in a position sufficiently propitious for rapid ascent along the nerve path. In other words, "the disease beats the serum."

Ira N. Kerns (in closing): I thank the gentlemen for their very liberal discussion of my paper. I tried to make the paper as practical as possible based upon experience, and am glad that my views have met with general acceptance.

As to the question of balsam of Peru and castor oil: I can see no possible objection to using this preparation as it may have some influence in promoting healing. Many types of ointments have been recommended and employed for the healing of wounds after infection has been overcome.

The most important items in the treatment of hand infections are: first aid as early as possible, prophylactic treatment, symptomatic treatment, incision and drainage where necessary, the application of moist heat where indicated, electricity either in the form of diathermy or other types, the ultraviolet ray, sunlight, quartz lamp, etc. All these measures are useful in preventing complications. If the patient is seen early severe infections can be forestalled in the majority of instances.

Anaphylactogenic Potency of Asthmogenic Proteins.—Pennati and Tolomei did not obtain Arthus phenomenon nor an anaphylactic shock in guinea-pigs from repeated injections of extracts of pollen and horse dander. They point out that these results do not disprove the probability of the anaphylactic nature of asthma.

SYMPOSIUM ON NASAL ACCESSORY SINUSES. OSTEOMYELITIS IN THE FRONTAL BONE AND PANSINUSITIS (CHRONIC): CASE REPORT.*

By A. L. BASS, Louisville.

Mrs. Ida Q., colored, aged 53. History: About four or five weeks ago she began to have swelling of left eyelids. Previous to that her health had been good as far as she was concerned.

Physical examination: Left eye closed, protruding downward and outward. Lids edematous, and swelling amounted to about the size of a tangerine. The skin on forehead was tender to touch; there was quite a bit of swelling and the forehead protruded about one and a half inches farther than normal. Nose showed both middle meati filled with polypi. X-ray showed cloudiness of all sinuses, and quite an extensive involvement of frontal bone, as you can see from the x-ray pictures. Temperature from one to two degrees above normal. Leucocyte count was 12,000, with 79% polymorphonuclears. Urine negative, and Wassermann negative. Diagnosis: Osteomyelitis of frontal bone, complicating pansinusitis.

Treatment: It was a question as to how much good could be done at one "sitting." On September 31, 1925, under general anesthesia I put in post nasal pack. "Cleaned out" ethmoidal region (bilateral) so as to get good drainage, "rasped out" frontal sinus ostia, then externally made a Killian incision on each side as for a radical frontal operation. The external and internal plates were absent for quite an area as you can see from the x-ray pictures. The skin over the frontal region was baggy, and when I put retractor into incision, it tore through skin, muscle, etc., "like it was mush." There was quite an amount of pus, chocolate color, in sinus cavities; cultures of which showed polyvalent bacteria; from which a vaccine was made and given to patient at weekly intervals. A rubber tube about 5 mm. in diameter was placed in each side from frontal sinus through ostia into nares. The wound was packed with iodoform gauze and allowed to remain four days and the tubes about two weeks. From the subsequent x-ray pictures you can see that the frontal area has cleared considerably and the antra area very cloudy. I remarked to the internes assisting me, if the patient lived we would do something else later. I left town the next day, and upon returning the last of October, found her alive and apparently doing well. On the 3rd of Decem-

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ber, I put in another posterior pack, snared off anterior tip of both inferior turbinates, and took down lateral wall of both antra; then packed both with iodoform gauze. When I punctured both antra, pus under pressure "popped out" into nares. You can see from the subsequent x-ray pictures, taken three weeks after second operation, quite a bit of clearing up of the antra.

ROENTGEN CHANGES SEEN IN PARANASAL SINUSES.*

By D. Y. KEITH, Louisville.

In the diagnosis of nasal accessory sinus infection the value of the roentgenray will depend upon two things: The ability and integrity of the roentgenologist, and his ability to produce films of very fine detail. The structures of the nose and sinuses, which include the antra, ethmoids, frontal and sphenoids, should be demonstrated at a single roentgen examination.

From this examination a comparison of the opposite cells should be obtained. It is necessary to recognize all of the confusing shadows thrown on the film by the structures at the base of the skull, including the cervical spine. To do this it will require stereo-roentgenograms in two or three different directions, as it is impossible to make films in one direction without serious superimposition of these shadows.

Unless fine detail is obtained, many of the slight changes in the bony walls of the various sinuses cannot be demonstrated. The one great objection to this method of diagnosis is the difficulty of interpreting the very slight changes shown on the roentgen film.

The structures of the nose, including the turbinates and septum, can be demonstrated, and a great deal of information obtained from their size and density. It is well known that the turbinates hypertrophy, the same as occurs in the mucous membrane of the sinuses.

In the acute infections probably the first changes are thickening of the mucous membrane and lessening of the capacity of the sinus. This will make the sinus capacity smaller and the walls denser than in a normal one. If the process progresses to a purulent condition it is likely impaction may occur. In this case the changes on the roentgen film are very definite and easy to recognize. If films are made in the lateral position with the patient upright a definite fluid level can be demonstrated. Quite frequently a fluid level can be demonstrated in which case a negative film would be obtained if the films were made with

the patient prone. The next changes may be either hypertrophy and polyp formation, which lessen the capacity of the sinus and can, as a rule, be demonstrated. With the addition of the non-irritating iodine preparation (Lipiodal) an injection into the antrum will quite often demonstrate the presence of a polyp or polypi which cannot be demonstrated by the usual method. Lipiodal is a 40% iodine solution in oil of poppy and gives a very dense shadow.

In a chronic sinusitis you get sclerotic and osteoplastic changes, the diagnosis then is made by bone reaction entirely. Fairly accurate diagnosis can be made if a history of the case is obtained and a careful study made by the clinician and the roentgenologist. The purulent type may also lead to deposit of bony tissue in the subperiosteal layer. The hypertrophic type may lead to an osteoporosis. We feel quite positive that polypi diseases of the antra and ethmoids are the result of the hypertrophic changes following infection.

When a unilateral infection occurs, we have the normal opposite side for comparison. We believe it is quite rare to see all the sinuses involved so you may have changes that are very slight up to complete impaction or complete bone destruction.

The size and shape of the various cells can always be demonstrated on the film. This appears to us of great importance as the chronic infected sinus may persist for months or years. We have seen many cases of almost total absence of the frontal sinus with a very definite history of a severe infection in childhood. There is little doubt that a severe infection of the nasal accessory sinuses in childhood may result in an arrest in the development of any of the sinuses.

It is our belief that all cases should have the benefit of a thorough roentgen examination before any surgery is attempted, as a great many of the minor changes cannot be demonstrated in any other manner. The slight roentgen changes frequently seen would be hard to demonstrate at surgical interventions as the surgeon depends entirely on the macroscopic appearances of pus. We believe with a closer cooperation between the rhinologist, the roentgenologist and the future clinical course of the patient after surgical intervention, that a great deal more definite information can be gained for future cases than we have been able to diagnose to our entire satisfaction. Let us trust that this cooperation will continue to prevail.

*Read in Symposium on the Nasal Accessory Sinuses, before the Jefferson County Medical Society.

ACUTE SINUSES.*

By C. Y. KELLY, Louisville.

The subject of acute sinusitis is a large one, and I will only discuss points that are of the greatest interest to us.

The sinuses in the normal state are free from bacteria which is brought about in two ways: (a) by the cilia of the mucosa which constantly wave toward the outside, and (b) by the secretion of glands situated in the mucosa which have a slight inhibitory action in the growth of bacteria.

Acute sinusitis is the direct result of bacterial invasion, whether these bacteria act directly on the mucosa, or whether the mucosa has already been depleted by some general disease, is a question for argument. The sinuses can also be infected through the blood and lymph channels during acute infectious diseases, such as scarlet fever, measles, tuberculosis, etc., also through traumatism and the presence of foreign bodies. This reminds me of a case I saw at Oglethorpe, Georgia. We were doing an antrum operation under local anesthesia, and removed a sponge from the sinus!

The germs that cause the most sinus disease are: (1) the influenza bacillus, (2) diplococcus, (3) staphylococcus, (4) bacillus pyocyaneus, and (5) colon bacillus.

Extension of the inflammation from neighboring parts can occur in two ways: (a) by direct extension along the nasal mucosa, and (b) through the wall of the sinus. The so-called coryza that is now prevailing is due to the influenza bacillus, and this is the most prominent cause of sinusitis.

Extension through the bone is usually in the maxillary sinus and is due to dental caries. I had a case of this kind a few months ago in which the patient was treated by a dentist for two months. The patient then came to me and I did an intranasal antrum operation with good results, the tooth socket being allowed to heal. The infection extended into the frontal sinus by continuity of the mucosa and by the position of the head, but subsided promptly under treatment.

Having briefly referred to things in a general way, I will now discuss the sinuses in the order of their importance and frequency of infection.

The maxillary antrum is the most frequently diseased of all the sinuses: (1) due more to the relationship of the teeth to the floor of the antrum (about 20 per cent of antrum disease is caused this way); (2) by extension of the infection along the mucosa; (3) from

infectious diseases through the circulation; (4) from nasal packing in acute maxillary disease.

The symptoms of maxillary sinus infection are fairly characteristic, the most prominent being: (a) a feeling of pressure and fullness of the affected side, (b) pain, usually not severe but constant, sometimes over the orbit, (c) the feeling of the "teeth being on edge," (d) headache, usually increased by coughing, sneezing, and the use of alcohol, tobacco, etc. (e) the sense of smell is often diminished (f) swelling of the eyelids and face is sometimes observed. No secretion from the maxillary is noted at first, but is commonly seen two or three days after the beginning of the disease. The character of the secretion may be serous, purulent, or consist of blood and pus mixed. The pus makes its appearance under the middle turbinate.

The diagnosis of maxillary disease may be often made by transillumination, and also by roentgen-ray examination, but best of all is puncture and irrigation of the sinus with normal saline solution.

The complications of maxillary sinus infection are few and far between, but orbital cellulitis, temporary blindness, meningitis, and brain abscess, have been occasionally observed.

The second sinus in the order of frequency is the frontal. The most predominant symptom of acute frontal sinus disease is pain. I have had patients walk the floor because of the intense suffering. Hypodermatic injections of morphine have little or no effect. Headache is intensified by leaning forward, coughing, sneezing, or the use of tobacco or alcohol. The eye on the affected side is usually painful on reading or rotating the eyes. Disturbance of the sense of smell is frequently a symptom.

The diagnosis is made by percussion over the sinus, by roentgen-ray examination, by suction, and the finding of pus between the middle turbinate and the lateral sinus wall. One cannot rely very much on transillumination in these cases. I know of a physician who depended upon this, and operated upon a patient who had no frontal sinus disease!

Complications are uncommon, but periorbitis, subdural abscess, thrombophlebitis and brain abscess have at various times been encountered.

The third sinus is the ethmoid. There are two types of acute inflammation which may involve this sinus: (a) the acute catarrhal, and (b) the acute purulent. The former occurs to a greater or lesser degree with every acute cold, depending upon the length and severity of the attack. The mucous membrane is swollen and contains small hemor-

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rhagic areas. Acute purulent inflammation of the ethmoid is commonly associated with frontal sinus disease. These conditions usually subside because the ethmoid has good drainage, and the destruction is less than in the other sinuses.

The symptoms are: headache, pain in the eye, loss of the sense of smell, and the ordinary symptoms of acute coryza.

The diagnosis in the acute form is made when the coryza disappears, yet the redness and swelling in the ethmoid region still continue. A point which should be emphasized, in this connection, is that one attack predisposes to another. I have seen several orbital abscesses from acute ethmoiditis, which were opened with satisfactory results.

The last sinus is the sphenoid. This is the most posterior of all the sinuses and cannot be seen anteriorly without removal of the middle turbinate. It is situated high on the wall and the narrowness of the spheno-ethmoidal fissure predisposes to engorgement and obstruction during an acute coryza.

Very little difference is observed in the pathology here from that in the other sinuses. Round cell infiltration and hemorrhages are the outstanding characteristics. The symptoms are similar to those in acute coryza, except that the headache is more severe and localized in the temporal region, there is tenderness of the eyeballs, the fever is higher than in ordinary coryza, and the patient complains of general malaise.

The diagnosis is more or less certain if the symptoms continue longer than those of an ordinary coryza should. Personally I have never been able to diagnose sphenoid disease in the acute stage, that is, to see pus merging from the sphenoidal opening.

In closing I would like to say that the diagnosis of acute sphenoid sinus disease is more conjecture than anything else.

Splenectomy in Malaria.—Dominici removed the enlarged spleen (2,700 Gm) in a patient with chronic malaria, who had developed considerable anemia, slight enlargement of the liver and slight jaundice (indirect reaction for bilirubin in the blood). The patient recovered completely.

CHRONIC SINUSITIS.*

By OCTAVUS DULANEY, Louisville.

The diagnosis of chronic sinusitis is not always an easy matter. The history of the individual case, however, may be an important aid. In the majority of cases you will elicit the fact that the patient, at one time, had the "flu" and that he now has frequent colds and is more susceptible to weather changes than previously. By further close questioning you may find that during the attack of "flu" or some time later the patient experienced peculiar head or facial pains accompanied by severe nasal obstruction and then followed by a profuse nasal discharge. From this history you may make a diagnosis of a chronic sinus condition being caused by the untreated acute sinus suppuration, this being the most frequent causative factor of chronic sinusitis. It is important to remember that an acute sinus condition rarely improves without treatment, and especially is this true in chronic nasal obstruction caused by deflected septa, enlarged turbinates, especially the middle turbinates, spurs, etc. I have been able to trace a few cases resulting from traumatic injuries to the nose. If the nose is left distorted the nasal drainage may become affected, but this is rarely true when the fracture is properly attended to at the time of injury. If the nose is left untreated a very slight cold may result in a painful sinus condition.

Pain as an aid in diagnosis: To begin with suppurative sinusitis is quite frequently a painless disease and in such a case it is very difficult to determine which particular sinus is involved. Pain is a very important point in the diagnosis of sinusitis; however, too much importance can not be placed in pain alone as it is the least understood of the entire symptom complex. In acute exacerbation head pains are one of the most frequent symptoms and taken with other clinical signs often make a diagnosis easy. There are many cases of sinusitis, however, that progress to the point where there may be serious complications without the history of the slightest pain in that connection. The patient often complains of headaches alone, and only by close questioning may you place the cause on some definite sinus. Where more than one sinus is infected at the same time, the nearness of the diseased sinus to the ganglion or some nerve may cause the pains to overlap or cause confusion, in which case it would be difficult to make a diagnosis. Some people seem to be annoyed with the congestive

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type of headache which also makes a diagnosis more difficult. Deflection, exostosis and chondroma of the septa, or enlargement of the turbinates, especially the middle turbinates, which when congested may help to close the ostia of the sinuses, cause pressure pain or interference with drainage and ventilation. Vacuum pain may be caused by negative pressure on a hypersensitive sinus membrane. It is possible to have an enormously obstructive nasal condition with slight or imperceptible pain. In the reverse, another patient may complain of excruciating and unbearable pain with a minor obstruction. The pain, in this case, would suggest a sinus condition, but with a careful examination, and the application of cocaine and adrenalin the symptoms may disappear entirely without the need of an x-ray examination to confirm the diagnosis. Practically all sinus inflammations are accompanied by pain, while in the chronic sinusitis pain is present in only about 50% of the cases. The character of the pain may be a diffused headache of the dull, heavy, full type and may be accompanied by the neuralgic type or there may be the neuralgic type alone. The headache may be continuous or come on and stop at definite hours. At the release of pressure the pain usually disappears quite suddenly even though it is produced by positive or negative pressure. The sudden cessation of pain is characteristic of sinus diseases. Pain caused by the ears and the teeth are usually easily diagnosed. Tri-facial infraorbital or supraorbital neuralgias are usually localized and have their tender points and in many instances are suggestive of the sinus condition, for many cases of neuralgia are caused indirectly by sinusitis.

Chronic Frontal Sinusitis: In diagnosing a chronic frontal sinus suppuration you may find a variety of symptoms. That of a mucopurulent discharge from the nose is the most prevalent. The discharge is usually intermittent or more profuse in early morning and often has a fetid odor. During the night the patient is in the recumbent position and the pus from the cavities collects in the nasal passages to be discharged in the morning when the patient arises. Intermittent local pain and tenderness is quite frequent and varies according to the retention or discharge in the individual case. Headaches may be quite frequent and may be general or limited to the region supplied by the supraorbital nerve. Mental lethargy and cerebral disturbances are often complained of. Nausea and vertigo are prominent symptoms in some cases. In acute cases of frontal sinusitis there is pain over the eye on the affected side radiating over the side of the head. There is a sense of fullness and of definite pain and both are increased

when the head is brought forward. In the suppurative type the pain is more severe in the early mornings and if drainage is started when the patient gets up he may be relieved by the middle of the day. On nasal inspection of chronic sinusitis where the frontal sinus only is involved, you usually find a thick mucopurulent secretion in the middle meatus. In the congestive type the pain may be constant. The diagnosis of a suppurative condition of the frontal sinus can not be made from the location of pain neither by transillumination. It is surprising to note the large number of patients who have rather rudimentary or complete absence of one or both sinuses. You will find more anatomical variations of the frontal sinus than any other part of the anatomy. They vary from one to a multiplicity of large cells differing extremely in shape, size and location and in many instances have finger-like projections extending laterally beyond the orbital cavities. It is impossible to get a clear conception unless the radiologist thoroughly understands that the frontal sinus must be rayed laterally as well as postero-anteriorly. The postero-anterior view may reveal a complete absence of the frontal sinus while the lateral view may reveal a well developed sinus. The unsuspected case is frequently met with in frontal sinusitis, especially in the individual where the nostrils are filled with polyps. In this type of case the x-ray is a most valuable aid in diagnosis.

Ethmoidal Sinusitis: The ethmoids are probably the most frequently involved of all the sinuses and the infection in the majority of cases is primary. The suppuration may affect the anterior group laterally or bilaterally without any apparent involvement of the posterior ethmoidal cells or the other sinuses. The anterior ethmoidal cells, maxillary and frontal sinuses are classified under the anterior group while the posterior ethmoidal cells and sphenoids come under the head of the posterior group of sinuses. Anterior ethmoidal cell inflammation gives a fullness between the eyes and over the bridge of the nose. If the orifice of the ethmoidal cells is closed and its cavity distended by suppuration, the patient will have symptoms of obstruction in the nostril of the side involved and a feeling of fullness referable to the nose, forehead or orbit. The middle turbinate will be enlarged and may be cystic or polypous in character. In this type of case the pus is usually very fetid. In the open type the usually constant discharge consists of a tenacious muco-pus with frequent crusts and the patient often complains of difficulty in trying to clear the nose. On examination you will find pus in the middle meatus of a green-

ish yellow color often accompanied by polyps. Nasal polypi occur more frequently in involvements of the ethmoids than in the other sinus diseases. When this polypous condition is found a tentative diagnosis may be made of an involvement of the ethmoids until the process of elimination has been carefully made. It is well to remember that the ethmoids and maxillary are frequently conjointly involved. In posterior ethmoiditis you will find the pus coming from above the level of the middle turbinate and it may appear anteriorly in the olfactory cleft, in the roof of the choana or in the naso-pharynx. Suppuration of the posterior ethmoid cells or the sphenoids may cause a confusion in diagnosis, for on examination you will find the pus in either infection in the same location. In posterior ethmoiditis the pain is not only between the eyes but there is a pressure pain as if the eyes were being pushed forward. The patient may complain of an obstruction or post nasal catarrh. Cranial or orbital complications may occur.

Sphenoidal Sinusitis: Sphenoidal sinusitis is often mistaken for ozena. Crusts in the nose are very frequent symptoms. This is favored by the position of the ostium which makes drainage rather difficult.

Chronic Maxillitis: Chronic maxillitis is not always easily diagnosed as it may take repeated examinations to confirm a diagnosis. Time, however, will not permit my discussing the pathology found in the different types of cases. There may or may not be a slight swelling or tenderness on the affected side. Many diseased antra are diagnosed unsuspectedly as pain caused by a chronic infected antrum is very frequently referred to some other region. When the patient complains of a very offensive nasal odor with a slight discharge, it leads us to suspect an antral involvement. Transillumination can not be relied upon to make a positive diagnosis nor even the x-ray as a badly infected antrum may show negative. If the antrum is filled with pus the diagnosis may be easily made, but in the dry type of disease it is difficult to make an accurate one. In washing out the antrum, in this type of case, little or no secretions will be found. Infection of the teeth is a common occurrence in this type.

Vesicorenal Reflux.—Miller believes that tuberculosis of the kidney is an important predisposing and determining cause of ureteral reflux.

NASAL POLYPI.*

By GEORGE A. ROBERTSON, Louisville.

This condition arises when localized edema of the mucous membrane of the nasal passages takes place and prolapse of the tissue results.

To Billroth and Zuckerkandl we are indebted for the study of normal nasal mucous membrane and clarifying the diagnosis of polypous formation from malignant growths.

The nasal mucous membrane of the middle and of the superior meatus, especially around the ostia of the sinuses, differs from the rest of the nose in being exceedingly thin, and that the underlying connective tissue is delicate and loose in its stroma. This extends into the sinus cavities. In this area any trauma or irritation produces edematous swelling.

Now, the normal and healthy condition of the sinus cavities and the upper areas of the nose depends upon good drainage and ventilation. Edema and a very close and narrow middle meatus produce stagnation and obstruction of the sinus areas. Any infection must extend inward deeper and deeper because of the congestion and blocking of its natural outlet, producing disturbance in the nutrition of the mucous membrane and then of the underlying bone. All polypous formation is only a gross and outward manifestation of this chronic bone condition beneath the mucous membrane.

The symptoms of polypous formation are usually sneezing, a peculiar ropy and profuse discharge, obstructed passages in the nose, embarrassing efforts to breathe, sometimes even asthmatic in nature, and a changed voice wanting in all qualities of resonance. This particular "foggy voice" is in itself diagnostic of polypi.

Examination shows usually well upward within the nose a shining gray mass filling the air space in the middle and lower meatus. Sometimes large polypi protrude from the nostril, and ulceration due to drying in the air and from trauma takes place. Polypi have grown into the epi-pharynx and hung downward against the tonsil or epiglottis.

There is rarely any pus or abscess formation and little or no pain; only difficulty in breathing and an excessive amount of secretion in the nose.

The treatment can only be effacious when the area of bony change has been reached and the re-establishment of ventilation of the sinus involved. To use a snare and removing the small and pendulous tumors is only temporary. A complete opening of the ostia and the removal of the diseased bone must be done if we hope to make a cure. When the mucous

*Read in Symposium on the Nasal Accessory Sinuses, before the Jefferson County Medical Society.

membrane of the sinus is restored, the drainage established and the ventilation returns to normal, then the polypous formation will be overcome.

TREATMENT OF INFLAMMATION OF THE NASAL ACCESSORY SINUSES.*

By SHELTON WATKINS, Louisville.

The treatment of the acute and chronic stages of inflammation of the nasal accessory sinuses is best discussed separately.

Under the local treatment of acute sinusitis may be mentioned the use of solutions to shrink the mucous membrane, antiseptic solutions, inhalations, irrigation of the nose, heat, cold, posture suction, catheterization of the orifices and puncture of a sinus wall for drainage.

The best solutions for shrinking the mucous membrane are adrenalin and cocaine. The former is to be preferred except when the patient is very sensitive to pain or to adrenalin. Sometimes they are used together. A 1 to 1000 solution of adrenalin is the usual strength, but weaker solutions are quite satisfactory. It is rarely necessary to use a cocaine solution of over 4%. They are applied, either with a spray or on cotton on an applicator, at least once a day. They cause marked shrinking of the congested mucous membrane, and when applied to the region of the orifices of the sinuses frequently open them, at least temporarily. This action is long enough as a rule to permit fairly good drainage, especially if suction is used.

Antiseptic solutions act better after the mucous membrane has been contracted by adrenalin or cocaine. Quite a number are in use. My preference is for the silver solutions and colloids, such as argyrol, neo-silver, and coltene. Mercurochrome is sometimes beneficial. It is often advisable to cleanse the nose with an alkaline solution, such as bicarbonate of soda 2%, before using an antiseptic.

Inhalation is really another means of relieving the turgescence of the nasal mucous membrane, but it serves also to accelerate the circulation of the blood and to stimulate the epithelium. A good solution for inhaling is one half of a dram of a 5% menthol in alcohol to one pint of steaming water. Inhale for five or ten minutes every four hours.

Irrigation of the nose with sterile normal salt solution is sometimes indicated when the discharge is very abundant and tenacious but the danger of thereby starting an otitis media must always be remembered.

Heat increases the circulation of the blood

and thereby relieves the pain due to congestion. It may be used in the form of a hot water bag, an electric pad, hot packs, electric light head-bath, or a wool shawl wrapped around the head. Some patients prefer cold to heat. It numbs the nerves and tends to inhibit the growth of bacteria.

If the orifices are not too badly swollen, posture is sometimes useful in draining the sinuses. It is more apt to be successful after the proper application of cocaine or adrenalin. The frontals and ethmoids are best drained when the head is upright; the maxillaries when the head is well downward and the face turned to the same side; the sphenoids, when the head is downward and forward.

Suction when produced by a machine should always be used with a gauge to be certain of not using it too strong. When the gauge registers 10 points it is enough. High degrees of suction may cause serious symptoms, as acute pain, haemorrhage and even cerebro-spinal rhinorrhea. Its use should be limited to adults. It is, as stated before, better to use it soon after shrinking the engorged mucous membrane. There are hand suction bulbs which sometimes are very useful.

Catheterization of the nasal sinuses through their orifices is not often practical. The frontal is the one most often catheterized but in about one-half of the cases it is not possible, because of hypertrophy of the middle turbinate or an acute angle in the naso-frontal duct. This procedure is quite beneficial in some cases of acute frontal sinusitis.

Puncture and irrigation is limited to the maxillary sinus, because it is a dangerous procedure in the sphenoid and frontal and impossible in the ethmoids. It is made as a rule under the inferior turbinate as near the floor of the sinus as possible. As with catheterization, it is followed by suction or irrigation with some sterile or antiseptic solution. In polysinusitis irrigation of a maxillary sinus full of stagnant discharge facilitates drainage of the ethmoidal cells and the frontal sinus. If marked improvement does not occur after six irrigations given every day, or on alternating days, this form of treatment should be abandoned. In rare cases the symptoms are so acute that an immediate puncture is necessary, but it is by no means always necessary to puncture and irrigate every acutely inflamed maxillary sinus.

General treatment aims primarily, of course, at increasing the patients resistance and making him comfortable. It is not necessary to go into details as the measures used are too well known. Atropine may be given when the nasal discharge and engorgement are excessive and continue after the first few days, but it should be remembered that a free dis-

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charge for the first three or four days is beneficial. It is nature's way of combatting and washing away the infectious organisms, and atropine early in the disease destroys this aid. I wish to emphasize the fact that many sinus inflammations are the result of a "run-down condition" from physical or mental strain and that rest in bed is indicated. The increased consumption of water, the taking of alkalies and a simple diet of largely milk and green vegetables, are other valuable measures in the general care of these cases. I believe also that besides fatigue, a faulty diet and faulty elimination are prominent factors in producing "head colds," which are usually infections of the lining membrane of several of the sinuses as well as of the nose, as they must be corrected to get the best results.

In some cases, especially where there are signs of retention of pus, an empyema, or complications such as orbital abscess or osteomyelitis, surgical measures are necessary.

Chronic sinusitis is best discussed under the headings: (a) non-surgical, and (b) surgical treatment.

The non-surgical treatment of chronic nasal sinusitis consists chiefly in the use of antiseptic solutions, vaccines and in increasing the patient's resistance by rest and tonics. Of antiseptics, I have already spoken. Vaccines are sometimes beneficial and curative, but the opinion of the majority of authors is that in most cases they do little or no good. Auto-genous are, I think, to be preferred to stock vaccines. Some patients with a slight discharge from a low grade so-called catarrhal infection of a sinus find a morning douche of the nose very helpful, and often continue it for years without developing ear trouble. There is, however, some danger in this procedure unless the patient is very careful. A nasal douche is preferable to irrigation with a fountain syringe because the force of the latter is liable to be too great. The fountain syringe should not be more than one foot above the patient's head. This treatment should be discontinued should the solution tend to flow into the Eustachian tubes.

I will not tire you with a discussion of the various sinus operations, which would not be proper before a general society. I will limit myself to the discussion of a few general surgical principles. Two of the cardinal principles in treating chronic sinusitis are to establish drainage and ventilation. Intranasal obstructions, such as hypertrophy of the middle turbinate, uncinate process or the bulla ethmoidalis, marked deflections of the septum and polypi, should be removed and, if the orifices are occluded, they should be enlarged or new ones made nearer the floor of the sinuses. Some cases of chronic sinusitis will get

well soon after the establishment of thorough drainage and ventilation, and it will practically always relieve headaches and other symptoms due to pressure and absorption. In many cases, however, the discharge will continue. We then know that we have to deal with a focus of diseased tissue which must be located and removed, such as infected granular tissue, necrosed bone or polypi. Drainage and ventilation will not cure such a case, the diseased tissue must be removed.

Another important point is to treat the sinuses in groups. The infection of a single sinus is comparatively rare. In the anterior group the maxillary and anterior ethmoids are frequently involved together. The frontal is less often, due primarily to the situation of the naso-frontal duct in the floor of the sinus which produces excellent drainage. On the other hand, the anterior ethmoid cells form most of the floor of the frontal sinus and an extensive infection of them practically always involves the frontal. Both sinuses of the posterior group are usually infected at the same time.

DISCUSSIONS.

George E. Vaughan: The papers we have just heard have covered the subject so thoroughly that it is almost impossible to make any comment; but I would like to call attention to some anomalies and also some accidents that occur during operations on the accessory sinuses. There have been quite a number of deaths in the last few years in operating on the antrum due to inflating or blowing air into the antrum, where just after inflation the patients had a spasm followed by death. The explanation of this is not very clear, but it is supposed to be caused by air getting into a vein or increased intracranial pressure. This has occurred in the hands of some of the best specialists throughout the country and should always be considered as a possibility.

The location of the pain in ethmoiditis is sometimes confusing. Frequently the only symptom of ethmoiditis is pain in the temple without any evidence of involvement of the nose, and this is very misleading in regard to our estimation of the case. I once had a patient of this character in a football player who the day following a game was brought to my office with severe pain in his temple. He weighed about one hundred and eighty pounds and apparently was in excellent health. I thought probably he might have had a fracture of the skull, but we know the pain attending ethmoiditis is frequently reflected to the temporal region. I examined his nose carefully, had several roentgenograms made, and also transillumination, but developed nothing to account for his trouble. The pain increased, and at the end of four or five days the eye protruded and we then knew the cause of the trou-

ble. He had a posterior ethmoidal abscess which was relieved by intranasal drainage with complete recovery.

Another peculiarity is an ethmoidal reflex cough. I first had my attention called to that in doing an ethmoid operation when the patient began to cough "right in my face." There had been no cough previously. I had never had such an experience at that time and do not believe it had ever been mentioned. I was unable to account for it. I was very much puzzled until three or four months afterward when a patient was referred to me who had been suffering with constant cough day and night without any definite symptoms to account for it. He had been seen and examined by an excellent internist who could not determine any special reason for the cough. There was no chest involvement, no history of a foreign body in the lung or anything of that character. Finally nothing but morphine would relieve the cough which persisted night and day. The patient suffered much discomfort and began losing weight. He was referred to me and in my examination I detected quite a well developed case of ethmoiditis. He was operated upon, the cough ceased immediately, a complete recovery followed.

I think the principal point in the consideration of ethmoiditis is the diagnosis. Of course that is true of all disease practically, but seems to be especially so of sinusitis. In past years we frequently had patients referred to us with very serious complications that had developed as a result of sinus disease which had not been recognized. We have seen patients with complete blindness of one eye and partial blindness of the other, also deafness and other complications, that developed as a result of sinus disease not having been diagnosed earlier in life; but specialists are better informed today and we do not see so many cases of that character. At the present time I think sinus disease is coming into its own. We are recognizing that these so-called chronic catarrhs, recurring colds, chronic arthritis and infections indefinite in character, can be traced to accessory sinus infection if we study our cases closely enough and are persistent in our efforts to locate the cause.

Samuel G. Dabney: Dr. Bass is to be congratulated on the result of his operation in the case presented. I agree with Dr. Kelly that the sinus most frequently diseased is the antrum of Highmore, and according to statistics twenty per cent of these cases are due to dental infection. Next in frequency, unlike Dr. Kelly who puts the frontal sinus next, I agree with Dr. Dulaney that the ethmoid should be put in second place.

One method of diagnosis in disease of the antrum of Highmore was not mentioned, that is the so-called posture test. Have the patient clean his nose thoroughly, shrink the mucous membrane with adrenalin solution, then have the

patient sit or recline with the head lowered. I am in the habit of having the patient recline on the sofa with the head lowered over the side with the affected side uppermost. Keep him in that position for a few minutes, then look into the nose again. If the antrum is infected pus will then be found in the middle meatus. Nature has made the antral opening high in the nose, so it does not drain readily until the antrum becomes filled with secretion; but with the head lowered according to the posture method, pus will appear in the nose if the antrum is infected.

Another point I want to make is that we may be mistaken in our diagnosis based upon one examination. To illustrate: a man came to me from eastern Kentucky complaining of pain in the antral region. Examination disclosed no pus and I could find no symptoms of infection. He was examined again a few days later and pus was found emerging from the anterior nasal meatus; he had antral infection and if a second examination had not been made a few days later the disease would have been overlooked.

As regards transillumination: I have found it of great assistance in disease of the antrum, of some assistance in frontal sinus infection, and of no assistance whatever in disease of the ethmoid sinus.

I was glad to hear Dr. Watkins speak of the fact that not every acute sinus infection requires operative intervention. It is well to emphasize that fact. No patient should be dismissed until he has fully recovered. Chronic sinusitis seldom subsides without the institution of operative treatment.

One symptom of sinusitis that I did not hear mentioned is typical asthenopia. The patient appears with pain in the region of the eye, headache, etc. Nasal headache is generally unilateral, and ocular headache generally bilateral, but there are exceptions, as in asthenopia from nasal disease.

The x-ray picture is of special value in outlining the frontal and other sinuses. It is often helpful but may be misleading as to sinus disease. I am of the opinion that the x-ray may present the appearance of sinus disease when this disease has existed long ago and is cured. I would like to hear Dr. Keith speak of this in closing.

Gaylord C. Hall: Regarding the case reported by Dr. Bass: I think he has gotten out of a serious situation very well thus far. It is not at all certain, however, that his patient will ultimately recover. There have been two papers published during the last year or two regarding osteomyelitis of the skull, and the consensus of opinion is that most of these patients die, or the vast majority of them succumb, for the reason that regardless of treatment the process continues. We may remove the diseased bone and cleanse the sinus but the process extends. In

all these cases an external operation is indicated, and sometimes a very extensive procedure is necessary. A case reported in one of the recent papers mentioned shows that the patient was under treatment for eight months or longer for osteomyelitis and yet death occurred from extension into the brain. It is hoped, however, that Dr. Bass' patient will ultimately make a complete recovery.

In discussing the complications of maxillary sinusitis Dr. Kelly failed to mention the teeth. I rather think that involvement of the teeth is a common complication. It is a well known fact that we may treat a case of maxillary sinusitis with every expectation and belief that the disease will promptly subside, but the patient does not recover, and further investigation reveals that one or more of the molar teeth are involved (usually apical abscesses) and until these teeth are extracted the maxillary sinusitis will persist.

One of the essayists spoke of drainage of the sinuses, stating that in his opinion drainage was best from the ethmoid, then he stated directly afterward that the ethmoid was most frequently infected of all the accessory sinuses. I think that these two statements are incompatible, because if the ethmoid has the best drainage of all the sinuses it would certainly not be the one most often infected. I think of all the sinuses,—and I am speaking now always of chronic cases.—it is a very close race between the maxillary sinus and the ethmoid as to which is the more frequently infected. As Dr. Watkins stated in acute cases it is rare to find a single sinus alone involved. When a single sinus is involved it is most frequently the maxillary sinus.

It may be of interest to note, and it is a well known fact, especially in acute sinus disease, that the pain in these cases does not respond to opiates. A patient suffering from the pain of acute sinusitis may be given large doses of morphine without very much effect. The reason therefore is, of course, that the pain is a pressure pain due to dammed up secretion in the infected sinuses. Careful shrinking of the mucous membrane of the nose with steaming or suction, will relieve pain much more rapidly than the administration of any drug.

I think something should be said in regard to the cocaine spray. Personally I do not like it. I think it is dangerous and may induce rather decided syncope. Adrenalin chloride seems to me preferable. This may be used in solution 1-5000 or 1-10,000. The stronger the solution the greater the reaction is like to be.

Joseph D. Heitger: While Dr. Dulaney spoke of chronic sinusitis, he stressed the point of a purulent discharge more than he did the hyperplastic type; yet in recent years due to the work of Sluder our attention has been focused on the non-suppurative type of sinusitis which is probably more frequent than the suppurative form.

In regard to the pathology of sinusitis as affecting treatment: Dr. Robertson mentioned some of the work of Zuckerkindl, but did not go into details regarding the reason why a great many of these nasal polypi result from chronic infection. The convex surface of the middle turbinate is covered by firm tissue like the palm of the hand and the bone is practically devoid of fat cells. The mucous membrane of the concave surface of the middle turbinate and the middle meatus is entirely different in structure, and is intimately attached to the periosteum. There are no fat cells in the medullary spaces of the middle turbinate, which is really a part of the ethmoid bone. However, we find fat cells in the uncinat process but not in the ethmoid capsule. The mucous membrane extends well into the medullary space, and that is another item of importance in the final operative result in a great many cases, because Hajek has shown that in the hyperplastic type there is deep bone involvement with areas of absorption and new bone formation; whereas in the suppurative form bone changes are not as frequent. For that reason in the hyperplastic type the roentgenogram shows nothing, because the areas of new bone formation are neutralized by areas of absorption. If the pathological process has involved the bony trabeculae and has extended deeply into the bone, no operative attack will produce a perfect result and we have to be satisfied with a half result.

M. C. Baker: In regard to the roentgen-ray findings in the diagnosis of accessory sinus disease: I have more faith in the roentgen-ray diagnosis than in transillumination, particularly when it comes to operative work. The roentgenologists have been invaluable to us in this line of surgery.

Dr. Kelly spoke of the causative factors in diseases of the accessory sinuses: As you will all doubtless recall during the influenza epidemic some time ago, and also in the milder epidemics that have recurred in the autumn and winter of each year since, the influenza bacillus was found to have a special predilection for the nasal sinuses. In nearly all these cases coincident with the influenzal infection there developed some trouble in the accessory sinuses attended by pain and suppuration.

Another thing is that I think we often overlook the importance of sinusitis in children. We frequently see children with chronic colds which persist for two to four weeks and even then some of the patients do not get well. There is a tendency to the development of bronchitis and laryngitis with excessive cough at times. I think it is always well to examine the ethmoid when laryngitis occurs in children. We should think more seriously of sinusitis in children especially when so-called colds last more than a few days. These children have various complications the de-

velopment of which could be avoided by properly recognizing and treating the original sinus trouble.

Charles K. Beck: Only one thing has been said in the discussion upon which I feel like commenting, and that is in regard to the use of astringent solutions in the nose: Dr. Hall said he preferred adrenalin chloride. I have seen two or three patients in whom a tremendous reaction was noted after the use of adrenalin solution in the throat which continues for several days, in one case between two and three weeks. In any event the result from the use of adrenalin chloride is only temporary, it does not last a great while. Of course at the time it gives ventilation and drainage to the sinuses just as well as cocaine does; but from a small amount of solution of cocaine one per cent I have never seen any reaction and believe there is no danger if only a small quantity is sprayed into the nose. I further believe the result is more lasting from cocaine than from adrenalin chloride.

C. A. Lester: Sinusitis cases are rarely treated by the general practitioner, in fact anyone who has either acute or chronic sinusitis has no business to consult a general practitioner. The patient, however, has no means of knowing he has sinusitis, so consults his regular physician. The important point is that, if disease of any special organ is to be considered, the general practitioner should refer his patient to a competent specialist for examination.

In my opinion examination of the eye, ear, nose and throat is just as valuable as a routine procedure in making an examination of the patient as making a blood count, taking the blood pressure, and all the other things that are done routinely. In many cases the accessory nasal sinuses are not even thought of, and ocular difficulties are not considered, though they may have quite an important influence.

Headache has been mentioned as a symptom of sinusitis, but in how many other diseases is headache a symptom? Their names are legion. I suppose almost any disease can be accompanied by headache. The type of headache and the time of its beginning are factors which should arouse suspicion. If a person has a headache in the morning after having been out on a party the night before, it is reasonable to suppose it is the result of the party. If he has headache only after prolonged use of the eyes, it is reasonable to suppose it comes from the eyes.

My observation and experience indicate that there are types of headache referable to diseases of the nasal passages. The principal characteristics of this type of headache are: first, there is no headache during the day, the patient retires feeling well but awakens in the morning with a headache, sometimes on one side, frequently on both sides, which subsides after a few hours; second, he will at time be attacked by violent head-

ache (which may often begin on one side and then spread to the other), and he will have a tender spot on one or both temples which pressure will generally elicit.

These symptoms are not strictly reliable, but are very suggestive, and when present are sufficient reason for referring the patient to a specialist. The general practitioner can easily learn and apply a few simple indications like these and will be much more interested in them than in the acutal treatment and care of chronic sinusitis, for which he is not equipped.

The matter of drainage of the ethmoid and the frequency with which the ethmoid is infected seems to have received considerable attention. The ethmoid sinus is not exactly of the same nature as the other sinuses. Drainage of the other sinuses, that is the maxillary and frontal sinuses, is through definite small openings, and is not always easily accomplished. The ethmoid, through the middle turbinated bones, is really a part of the respiratory passages. I am of the opinion that every common cold, and a common cold is really a bacterial infection just the same as diphtheria, affects the middle turbinates and also the ethmoid sinuses. If the ethmoid sinuses were not well drained, we would have a great deal more ethmoid trouble than we do. There is a large amount of ethmoid sinusitis that is not recognized. The patient may have symptoms that can be referred to focal infection. Now, focal infection is merely a term, to many people it does not mean anything. When we come to think of it, focal infection merely means a place where germs are lodged, and we get a world of focal infection in the accessory sinuses; these may be involved just as frequently as the teeth, tonsil, gall bladder, or an infected ingrowing toenail, for instance. Many people so affected will complain of dyspepsia or indigestion, they have headache which is believed due to their indigestion, and their physician will give them treatment as indicated by the symptoms. The treatment has no effect, and frequently the whole symptom-complex may come from infection situated in the ethmoid.

The point I want to make is that whenever the patient has headache, especially the morning type of headache that subsides after a few hours, the type in which the tender points I have mentioned can be elicited by pressure, we can always strongly suspect accessory sinus infection. If we could get some of these points before the general practitioner and induce him to send the patient to the specialist, then we could give him the benefit of the knowledge with which we happen to be blessed and finally succeed in giving him some relief.

Regarding the proper solution for use in the nasal passages: Dr. Beck suggested a solution of one per cent cocaine. I agree with him in this. I am particularly susceptible to both adren-

alin and cocaine, the after-effect being very disagreeable. I have used with considerable satisfaction at times a solution consisting of ten per cent of the regular 1-1000 adrenalin in sterile water and one per cent solution of cocaine in that.

A. L. Bass (in closing): With reference to the case reported: This patient has left-sided motoroculi paralysis. The fundi are normal.

I appreciate Dr. Hall's remark about ultimate recovery in cases of this kind, and the patient is fortunate to be here. The mortality rate in osteomyelitis of the frontal bone is about fifty per cent. I would rate this woman at about eighty per cent. I told her people at the first operation that I would do something more later if she survived. In operating for osteomyelitis of the frontal bone one has to go wide of the mark or limit of the disease if any benefit is to be accomplished.

Pain referred to the speno posterior ethmoid region appears in the morning from three to eight o'clock and subsides about noon time.

In regard to nasal polypi: I use to be a firm believer that polypi are the result of chronic sinusitis. I saw a patient a few days ago who told me someone had removed a polyp from his nose. He had polypi on anterior tip of both middle turbinates. Both transillumination and roentgen-ray examination were negative as to sinus involvement. I have never seen polypi without sinus involvement heretofore.

As to douching and irrigation: I think a half teaspoonful of sodium bicarbonate and a half teaspoonful of sodium chloride to a pint of water makes an excellent solution for douching the nasal mucous membrane in subacute sinus affections.

Dr. Vaughan referred to the mortality resulting from puncture and irrigation of the antrum: I remember five or six years ago reading an article where someone reported about twenty deaths from irrigation of the antrum of Highmore. These patients died "right now," did not give anyone much time to do anything for them. Had I read that article before doing any antrum punctures, think I would have my first antrum to puncture today; but as it is, I do not know how many I have irrigated without dire results, and will continue to irrigate when the indication warrants it.

In regard to the x-ray and transillumination: While transillumination is a valuable guide, the roentgen-ray findings furnish the final proof of sinus involvement, especially if one is going to operate. I cannot recall a sinus operation that I have performed without an x-ray picture being made first. I recall one patient who had a polyp in both middle meati. Roentgen-ray examination showed all the sinuses clear except the antra. The polyp was removed and both antra operated upon and the patient is well today. With

reference to the relief of pain: I think aspirin is more effective in relieving the pain of acute sinus disease than morphine. It produces a sudoresis which in turn helps to relieve the congestion in sinuses which produces pressure pain, besides relieving muscle pain.

D. Y. Keith (in closing): With reference to Dr. Dabney's question: There is yet to be learned many things from an x-ray point of view regarding sinus disease. Whether a sinus affection which has been cured symptomatically would present the appearance of an active infection: I do not think so. Of course, any type of infection involving the sinuses produces swelling of the mucous membrane as an early change. The late changes are all bony in character.

With regard to eye symptoms in sinus affections, a personal experience may be of interest: Last month I had an acute infection of the left antrum of pure staphylococcal origin. Free drainage was secured through a natural large opening without any trouble, and I thought I was well in a few days. Within ten days there was a recurrence accompanied by pain in the left eye with considerable lachrymation which continued for four or five days. An x-ray examination showed involvement of the left frontal sinus, a very definite involvement of one cell. Pain in the left eye was relieved by the use of a 1-5000 metaphan solution with no symptoms 24 hours after the nasal instillations were instituted. Evidently I have very good drainage, otherwise there would have been more trouble. Frontal sinuses that are well ventilated and of the pneumatic type usually drain well, resulting in a cure without operative assistance.

Octavus Duaney (in closing): It was impossible to say very much about chronic sinusitis in a ten minute paper. There are many things I would like to have emphasized and discussed about the classification of sinusitis into the hyperplastic and suppurative types.

I am glad that Dr. Heitger mentioned the dry type of sinus infections, especially ethmoidal. I have operated many cases where no pus was present, the middle turbinate was easily removed with dressing forceps and all ethmoidal cells were found obliterated presenting a large cavity presumably caused by an active dry necrosis or destruction of the ethmoidal cells.

In diagnosing antral infections, Dr. Dabney has explained that the posture test is very important. If the frontal or anterior ethmoidal cells are involved and the patient is left in an upright position after swabbing away all nasal secretions, the pus will quickly reappear in the middle meatus. If the pus or secretions do not reappear have the patient recline, as Dr. Dabney suggested, and if the antrum is involved on re-examination you will find pus in the middle meatus.

There are so many different causes of sinus

infection that it is often difficult to decide where the trouble originates. Many patients are referred to us by internists because of pain variously situated and sinus disease is unsuspected. Pain of sinus infection is often referred to some other region and the patient is sent to us with the request for diagnosis or to determine whether or not there is some focus of infection. Many patients complain of no pain until there is involvement of the sphenopalatine ganglion, and when this occurs the pain may be distributed anywhere over the face or in the temporal region or even behind the ear suggesting mastoid disease.

TREATMENT OF GASTRIC AND DUODENAL ULCER.*

By H. M. MEREDITH, Scottsville.

That the question of gastric and duodenal ulcer is a serious consideration of the medical profession, is evidenced by the inexhaustive literature, by the modern writers of our country as well as that of foreign tongue.

The etiology (which is unsettled), pathology, symptomology, experimental production, its relation to infection, diagnosis, location, and methods of treatment all come in for a liberal share of publications.

The writer does not feel competent or presume to do more than to discuss the topic in brief touching the high points in the treatment.

To begin the successful treatment, emphasis must be placed on the proper diagnosis; and sex, age, occupation, time of existence, recurrent location and the study by x-ray all enter into the fundamentals of the treatment and last but not least the cooperation and education of the patient; this rates in importance to that in the successful treatment of tuberculosis and diabetes.

The preventive treatment of ulcer, is well worth our thought, as most patients give a frank preulcer history, or a gastric syndrome that is quite regular, not that all patients with this history have ulcer but practically all ulcer cases have gone through this stage and it is believed that many ulcers may be prevented or arrested in this stage before the damage to the stomach or duodenum has taken place. While the etiology of ulcer is yet undetermined, it is noted that frequently these preulcer conditions are improved by elimination of all sources of focal infection, which as a rule are present, especially in teeth.

The treatment is divided into medical, surgical, and again medical. In the simple peptic ulcer without, or before organic changes

have occurred in the stomach the treatment is purely one of medical type, if the walls of the stomach are scarred to the extent that the proper emptying of the stomach is impaired, then it is one that needs surgery to correct the deformity.

The Medical Treatment: The chief sources of injury to the ulcer are first the chemical action of the digestive juices and second the mechanical irritation from peristalsis and inappropriate foods and in the main the treatment is to be directed to the avoidance of these conditions, with an additional view to the proper caloric value of the diet to maintain the daily energy expenditures of the patient.

Probably in the course of every ulcer, or at least during a part of its course, there has been or is a hyperacidity and its secretion unduly prolonged; this is the probable cause of the pain and gastric distress in these cases, in the absence of obstruction of the pylorus or duodenum and is due to the irritation of the nerve endings in the ulcer.

The problem in the main is to neutralize this hyperacidity and give rest to the stomach, with a diet of high caloric value to maintain the nutrition of the patient as these patients are often anemic and especially after hemorrhage.

While there are many good plans mapped out as a treatment, the one most universally accepted is the Sippy or as modified by some internists. This is as follows: First, absolute rest in bed on a diet of three ounces of equal parts of milk and cream, each hour from 7 a. m. to 7 p. m. Within three or four days other articles are added such as eggs, crackers, bread and butter, with cereals. Depending on the severity and progress of the case, the medicines used, are each hour midway between the feedings during the day and each half hour for 4 or 5 doses after the last evening meal. The administration of a powder consisting of soda bicarbonate and magnesium oxide, heavy, of each 10 grs., alternating with a powder of 10 grains calcium carbonate and 30 grains sodium bicarbonate. This is the set treatment for the typical ulcer as marked out by Sippy and his disciples, and if carried out with intelligent cooperation of the patient will result in the cure of 80 to 90%. This is of course the uncomplicated ulcer. The trouble with this treatment as is the condition with many other stereotyped forms of treatment, should be modified to fit the individual case. In some cases gastric lavage is essential, two hours after the last evening meal, for removal of the residue and the dilution of the hydrochloric acid.

If hemorrhage is present, opium and absolute rest are essential, ice to epigastrium, hem-

*Read before the Third District Medical Society

ostatic serum. Calcium chloride intravenously 15 grs. each 6 hours until hemorrhage is controlled is worthy of consideration; absence of food in stomach with glucose solution per rectum is warmly advocated.

Our attention is drawn by some to the recent papers to the danger of hyper alkalization of the stomach and blood and suggest that the calcium carb. and soda be materially reduced, on account of impairment of renal function; this is especially emphasized in cases with coexisting liver or renal lesions.

As heretofore expressed the medical treatment of ulcer is one of absolute cooperation of the patient, he must be educated and make his habits and diet his daily religion.

These cases demand careful and frequent observation. The nervousness which is practically always present should be allayed, the weight should be maintained, the caloric value of the diet should be balanced against the amount of exercise which is demanded of the individual.

As to the surgical treatment: in reviewing the literature of medical writers for the past 50 years, on this subject, one cannot but be impressed with the fact, that little progress has been made in the etiology, symptomatology or treatment, except that by surgery and radiology.

Some of our leading surgeons contend that 80 to 90% of ulcers should be treated surgically and that it will eventually be the procedure in most cases, while on the other hand our internists claim a like percentage of cures from medical treatment, so if we accept the teaching of both, our feet would be in the air.

There is no doubt that too many ulcers are treated medically indefinitely when there is no chance to cure them, because new conditions have developed; stenosis, which can only be dealt with successfully by surgery to relieve the obstruction to prevent adhesions, perforations and more important cancer transformation.

Stenosis, when not relieved by atropine, and confirmed by x-ray and not relieved by anti-leptic treatment, patient past 40 years of age, occult blood in stools, repeated hemorrhage, anemia and ulcer located definitely in duodenum, should have surgery. The question of the exact operative procedure, demands the skill and judgment of a real surgeon. The question is whether the normal function of the stomach can be restored by pyloroplasty and removal of the ulcer or pylorotomy for removal of the ulcer bearing surface or gastro-enterostomy, which is of less danger and usually gives the best end results. The condition of the gall bladder should be determined, and diseased should be removed. Also in per-

foration of gastric ulcer surgery has saved many cases which were otherwise hopeless.

It is to be remembered that these patients should be advised that their medical treatment is not terminated with surgery; they will continue a part of the symptoms and your worry is not over with them. They should be reminded that the surgery does not restore fully the normal function of the stomach but it is to keep them alive, and that the secretion of hydrochloric acid has not been relieved by surgery in every case.

FOCAL INFECTIONS AS CAUSATIVE FACTORS IN THE PRODUCTION OF MEDICAL AND SURGICAL CONDITIONS.*

By LEON L. SOLOMON, Louisville.

This caption may appear novel in that the term focal infections appears in the plural. More commonly the term appears in print, "focal infection." Purposely the word "infections," in the plural is employed in the caption, because the single infection is less frequently encountered than multiple infections.

For more than twenty years volumes have appeared in literature and much has been spoken in convention hall concerning a subject, which Billings so forcibly brought to attention. Here and there, other men accepting the theme, as it applies to both medical and surgical conditions, have added to our understanding of the question.

And yet, many medical men and many surgeons either question the focal infection idea or they ignore it, and so few apparently grasp the commanding part it plays in the production of a vast number of common ailments, it appears proper that prominence be given the subject in this symposium.

The surgeon who finds a lymphangitis in the lower leg or discovers enlargement of glands in the popliteal space or groin at once and properly looks for a causative focus, which he expects to find somewhere below the part involved. It is rare that he is not immediately rewarded in his search. For the same reason, he would do well to look for the focus in many other surgical conditions, which he is daily called upon to diagnose and to treat.

Likewise, the physician who finds his patient suffering from a so-called rheumatism, a neuritis, an asthma, a glycosuria, an albuminuria or an epilepsy would do well to search for the focus or for foci, charging them with being responsible for these several conditions.

Those who are indifferent to the focal in-

*Read before the Jefferson County Medical Society.

fection hypothesis, as it applies to medicine and surgery, and those who complain that we are surfeited with dissertations on focal infection are both misguided and misinformed. The writer has long since been convinced that focal infections are responsible for a vast number of medical and surgical conditions, which the doctor is called upon to treat many of them immediately disappearing, when the focus of the foci have been removed.

Not so many years ago, we spoke of and we wrote about rheumatic arthritis, rheumatic endocarditis, rheumatic sore throat and the like. How it was possible for such nomenclature to exist is difficult of conception today. And yet one need not turn back more than ten or twenty years to find these and similar terms in common use, made authentic by text books.

Omitting to take cognizance of the part played by a given focus or by multiple foci in the production of conditions, solely the result of such focus or foci, and omitting to remove the causative factor or factors, is equivalent to mopping up the water as it overflows the floor, and neglecting to turn off the faucet.

There was a time when this procedure was employed to determine the propriety of recommending dismissal of patients from insane asylums. The subject, whose sanity was apparently returning, was allowed to pass through a room, where water from a running faucet was overflowing the basin, mops placed near-by.

Provided the patient, whose returning sanity was being tested, mopped up the water, he was looked upon as being insane—he was ordered back to quarters. If, on the other hand, he seemed to grasp the situation, quickly turning off the faucet, he was considered as having executed a sane act and was recommended for dismissal.

Subjected to similar test on the basis of the logic, employed in treating disease, how many surgeons might well have their sanity questioned? How many would be ordered returned to quarters can be imagined by the overwhelmingly large group, who continue to blindly treat *effect*, ignoring *cause*.

Where is the logic of placing a patient on a strict diet, administering insulin and other remedial agents to him, when no attention is paid to the condition or conditions, responsible for his inability to properly convert, digest, metabolize and warehouse carbohydrates?

Both internist and surgeon have been slow to accept the belief, that the snugly hidden-away infection may be wholly responsible for the epileptic seizure or the gastro-duodenal ulcer. Both surgeon and internist have been

slow to accept the thought that renal lithiasis, cholelithiasis and diabetes mellitus are frequently but outward expressions of focal infection.

The epilepsy continues to be treated as if it were a real entity. Where no evidence of cerebral or cortical pressure may be proven, epilepsy is usually managed on the basis of its being an essential disease. The gastro-duodenal ulcer is almost invariably treated surgically—it is removed on the basis that it is an essential condition and can only be cured by removal, paying no attention to the focal infection, likely responsible for its existence.

Though the denuded mucosa is deftly excised, the patient making a satisfactory primary recovery, ere long returns with an ulcer located nearby or at some not far removed point. Such treatment assuredly must fail, for the reason that the cause is not sought out and removed. Similarly, epileptic seizures must persist and for the same reason.

In the case of stone in the urological tract or gall bladder, though it be skillfully removed, the patient returns to the surgeon or he seeks professional advice elsewhere, because other stones have formed or other conditions have arisen, the same cause or causes continuing to be operative.

The Rheumatisms: The commonest expression of focal infection is seen in that most common occurring of all ailments, the so-called rheumatisms. The great body of the profession continues to treat rheumatism as an entity.

Among the list of remedial agents, heralded to cure, will be found things as simple as the juice of one or more lemons drunk each morning before breakfast—things as complex as the all but impossible chemical formulae of synthetic drugs. New additions to the already huge family of "rheumatic cures" constantly appear.

We are asked to "mop up the water" when we should "turn off the faucet." What is the sanity of drugging patients for rheumatism? Who ever knew any drug, except possibly an active cathartic, to remove the condition, responsible for sore and stiff muscles? Provided the patient treated for rheumatism gets well, it is usually by the grace of God, who removes the cause, the physician looking on and administering drugs.

How could colchicum remove the underlying cause or causes, responsible for an acute articular rheumatism? How can sodium salicylate or salol or phenactin cure a subacute attack or a chronic involvement? And yet these drugs are no less potent than the myriad of chemical substances with which the profession is deluged, startling claims being made

for remarkable cures effected by one and all of them.

As was recently said when the writer discussed this subject before a group of physicians: "lest he be misunderstood, this is not a tirade against additions to the *materia medica*; it does not mean to underestimate the value of delicious lemon juice; it is no brief against proprietary medicines; I have no objection to proprietorship in medicine. Certainly much good has been accomplished by the chemical laboratory, the pharmaceutical laboratory and the biological laboratory, owned and operated privately for gain."

However, I do mean to ask the profession to halt, taking time to search for the cause of rheumatism and finding the cause, remove it—"turn off the faucet," "the effect ceases." I constantly prescribe drugs for my rheumatic patients but never until I have cleaned up such patients of all of his known focal infection. Do not misunderstand me as being a therapeutic Nihilist. As one time teacher of *Materia Medica*, I was always considered a therapeutic optimist.

For many years, I have specified Merrell's Sodium Salicylate. Because the salt is presented in a pure form, free from sulphates, chlorides, creosotic acids and other unconverted phenols, I have looked upon the Merrell product as marking a real achievement in medical chemistry. I have also been a consistent user of the iodides, including hydriodic acid, and, when prescribing the latter, have either specified glycerine or Gardner's syrup. I believe that atrophin is a much worth while addition to our drug armamentarium and that tolysin can be counted upon to render a distinct service in the direction of solution and elimination of uric acid.

To the salicylates, to atrophin, to tolysin I am willing to ascribe a stimulation of hepatic function, their cholagogue effect overcoming intestinal stasis, fermentation and putrefaction. The above resultant action from the administration of these drugs must lessen the distressing and disastrous effect, common to the "meat eating rheumatic," whose colon if not his entire gut has become a veritable cesspool of infection.

It has been my experience, however, that what constitutes rheumatism as we know it, is, for the most part, but the expression of focal infection, located somewhere in the body. Most frequently, the cause will be found in the buccal cavity or the tonsil. In looking over my records for nine years, I find that the tonsil is the chief offender, the gums and the teeth following in order.

The patient becomes rheumatic, he suffers with stiffness and soreness in muscles, stiffness and soreness in joints, pains along tracts

of nerves. Most frequently this means bacterial invasion, with consequent absorption of the chemistry of bacterial life.

Infection in the sinuses is often responsible for rheumatism. In my experience, infection located within the intestinal tract—the small gut less frequently than the large gut—is a more common site.

Gonorrhea plays a distinct part, syphilis plays a not infrequent role. Most frequently, however, in daily practice the case of rheumatism, which we encounter, is a myositis, an arthritis, a synovitis, a neuritis due to focal infection somewhere. If such be the case, it behooves us to search for the part involved.

This search is not complete until every possible hiding place has been definitely interrogated—the bile passages, the gall bladder, the appendix, the caecum, the sigmoid, the rectum and elsewhere. Likewise the search must be carried through the urological system, including the entire genital tract, from kidney through to meatus. And in the female, in any part of the tubo-uterine canal may be found the seat of the infection. In particular, I emphasize the cervical mucosa and cervical glands.

A case is recalled where long continued rheumatism, affecting muscles and joints, despite every effort at cleaning up infection, continued to persist and only disappeared after the surgical removal of the cervix.

What could be more idiotic than the treatment of the so-called rheumatisms solely by diet, by administration of anti-rheumatic drugs and by mineral waters and baths, ignoring all the while a mouth full of infection or a pair of tonsils, unquestionably the seat of disease? What could be more insane than the treatment of an epilepsy or the treatment of diabetes with medicines, ignoring the removal of the focal infection responsible in the one instance for the storm in the nervous system, in the other instance responsible for disfunction of pancreas and liver?

Then, and only then will the effect, commonly described as rheumatism, disappear from medical practice, when we have learned to search for the cause of lumbago, arthritis, synovitis and neuritis and finding the cause, have removed it. Then and only then may we be permitted to say we have a real grasp of the situation, when we realize the dominant role played by focal infections.

Effect of Ultraviolet Rays on Rabies Virus.—

On the basis of his experiments Takaya asserts that the ultraviolet ray does not have any effect on the virulence of rabies virus.

SAWDUST BEDS.

By W. R. THOMPSON, Assistant Superintendent Eastern State Hospital, Lexington.

A quarterly report for July of the Department of Public Welfare of Illinois gives a short description of sawdust beds, in use in a hospital in Bauch, Germany, for the helpless, untidy insane. This class of patients is the most trouble of all in any hospital, and any provision that adds to their comfort and makes easier their care is worth installing.

On the twenty-second of last September six of these beds were placed in one of the rooms on the untidy ward of the Eastern State Hospital, Lexington, Kentucky, and six of the most helpless, untidy patients placed in them; two of them having bed sores on backs and hips, which had only grown worse under the ordinary methods used to heal them are now well.

These beds are oblong boxes made of one-inch dressed boards; six feet, six inches long, thirty inches wide, twenty-four inches deep, standing on legs six inches high and painted white.

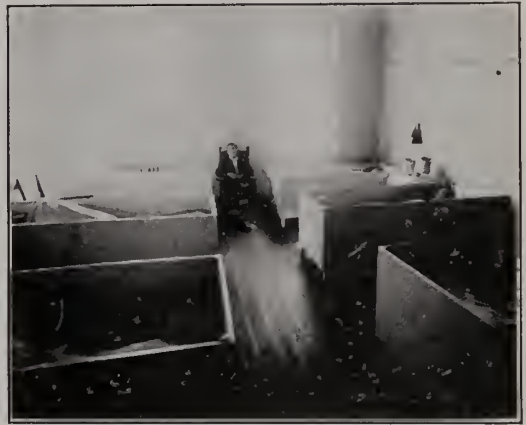
They are half filled with fresh sawdust that has been passed through a one-quarter inch sieve. The sawdust should not be too fine on account of packing, and may be renewed as a whole at any time with but little trouble, if necessary from any cause.

These beds have proved so satisfactory, it has been decided to put them on all the untidy wards in the institution for the worst of this class of patients. The new ones being made at this time are like the first except they will be only eighteen inches deep and stand on twelve-inch legs; experience having shown that a six-inch free board above the sawdust is sufficient for all purposes. They can be placed on rollers if desired.

The patient with short night shirt on lies directly on the sawdust, which readily conforms to the shape of the body but does not in any way interfere with movements of body or limbs if able to make them. A pillow is placed under the head and he is covered with sheet and blankets according to the temperature of the room.

The excreta from the bowels and kidneys with the small amount of sawdust soiled by same is scooped out immediately, with an ordinary six-inch scoop and destroyed. Fresh sawdust is added from time to time to keep the total up to the twelve-inch level, and is stirred to the bottom several times a week to keep from packing too hard, and the top is easily kept level with scoop or hand. These six beds

and the room are cared for by one fairly intelligent patient helper under the supervision of an attendant.



The patients suffer no inconvenience whatever; are easily changed, bathed and cared for in all necessary things and appear to be more comfortable than when in the regular bed with sheet and rubber cloth under them.

Their advantages are as follows. They are sanitary, neat and clean in appearance—all odor is eliminated—bed sores do not develop and readily heal when patients with same are placed in them, even far advanced paralytics.

They can be quickly made by any carpenter, and the original cost and cost of maintenance is small compared with the regulation hospital bed and its equipment. No restraint is needed to keep the patients from falling out of beds as they often did; bruises and sometimes broken bones resulting, regardless of care attention.

The saving in laundry is quite an item in hospitals and a helpless, untidy patient will soil from twelve to eighteen sheets every twenty-four hours. By the use of these beds twelve hundred and ten sheets were saved on this ward from September twenty-second to November fifteenth. Night shirts are seldom soiled, and the patient is never wet from the discharges from the body as the sawdust absorbs all moisture at once. It is surprising what a small amount is dampened by a free evacuation of the bladder.

The members of the medical profession who have seen them in operation praise them highly and wonder why they have not been thought of before, and as yet no objection has been made by friends or relatives of the patients to their being in these beds.

ACUTE RETENTION OF URINE DUE TO TRAUMATIC STRICTURE OF URETHRA IN A BOY EIGHT YEARS OLD. CASE REPORT.*

By IRWIN H. CUTLER, Louisville.

The following case history presents several unusual features which may prove of more than ordinary interest to the members of this society.

J. S., aged 8 years, schoolboy, Ohio County, Kentucky, was referred to the Solomon Clinic October 18th, 1926 and admitted at once to the Deaconess Hospital. He complained of intense pain over the suprapubic region, urinary urgency, vesical tenesmus, and inability to micturate. During the last twenty-four hours he had voided only a few drops of urine with great difficulty, and his bladder was distended, reaching the umbilicus.

About six weeks previously, while riding on a wagon carrying 500 feet of green lumber, he fell and one rear wheel passed obliquely over his pelvis. He was taken home and a physician summoned. The doctor, a very competent man, could find no injury and no fracture. It was noted that the boy had voided a small quantity of blood-tinged urine soon after the accident, but this did not arouse apprehension. He was kept in bed two days, against his wishes, and then allowed to resume his usual active life.

About three weeks later he began complaining of difficulty in voiding his urine, and within a week experienced great pain on attempting to urinate, with urgency and tenesmus. The stream became weak and he was unable to empty his bladder completely. Under an anesthetic an attempt was made to introduce a catheter without success. He was then taken to Owensboro where another attempted catheterization failed.

At the time of our examination the patient had practically complete retention of urine; with considerable straining, he could void a few drops. Urinalysis showed: cloudiness, specific gravity 1020, acid reaction, a trace of albumin, no sugar, six to eight pus cells per field.

Under novocain anesthesia a filiform met with obstruction at the bulb. The boy was prepared for external urethrotomy, in the belief that under general anesthesia a filiform and guide might enter the bladder. Under nitrous oxide-oxygen anesthesia I was able to pass a No. 8 F. metal guide with some difficulty. A vertical incision was made beginning just behind the scrotum and ending about one-half inch in front of the anus. Af-

ter exposing the bulb, the groove was located. A vertical incision about one-half inch long was then made opening the floor of the urethra. A small grooved director entered the bladder and about 300 cc. of urine was withdrawn. Considerable dense scar tissue was encountered in the bulbous urethra, which was incised. The meatus being very small, meatotomy was performed; a No. 16 F. metal sound then passed into the bladder without difficulty. A No. 12 F. Malecot catheter was inserted perineally for bladder drainage, the tissues being loosely approximated around it. The vesical cavity was irrigated twice daily through the catheter, while the urethra was allowed to rest. On the third day the catheter was removed; the patient was able to void his urine partly through the urethra. One week after operation the wound was closed, the boy emptying his bladder per urethra. A metal sound was passed on several occasions; then the patient was allowed to return home. The referring physician was advised to pass sounds regularly and to observe any tendency of the stricture to recontract.

Rupture of the urethra is a comparatively rare accident, especially if unassociated with ruptured bladder or fracture of the pelvic bones. In this case the rupture probably occurred just in front of the triangular ligament and was not very extensive.

There are three immediate symptoms or signs of ruptured urethra, viz., (a) effusion of blood, (b) extravasation of urine, and (c) infection, any of which should lead to medical attendant to make a correct diagnosis. Except for slight hematuria at the outset, this boy had no symptoms until contraction of the scar tissue had occurred.

The rapidity with which the rupture healed and contracted to filiform size is amazing, though not unusual. Keyes (Cabot: "Urology") found in forty-four cases, all appeared within six months of the injuries, excepting four.

Traumatic strictures are difficult to manage because they contract more rapidly, and recur after operation more frequently, than gonorrheal strictures. The entire course of traumatic stricture depends on the treatment, especially that instituted at the time of the accident. Slight injury should be treated by the early passage of sounds to control tendency to contraction. In graver injuries, especially occurring in the posterior urethra, immediate perineal section is required. Subsequently, sounds are passed at regular intervals; but if contraction recurs, a second external urethrotomy may be performed.

If rupture of the urethra is unrecognized at the time of the accident, operation is indicated at the first sign of urinary obstruction. In

*Read before the Jefferson County Medical Society.

cases of acute retention, suprapubic puncture should be avoided because of the danger of urinary extravasation and infection, while the passage of catheters will only produce greater trauma with its inherent dangers.

DISCUSSION

Edward R. Palmer: Traumatic strictures of the urethra, as Dr. Cutler remarked, are among the most difficult lesions with which the urologist has to deal. They are practically always due to injury, such as falls or blows. I recall the case of a boy eight or nine years old, seen several years ago, who fell astride of a fence causing urethral rupture. The condition was recognized promptly by the attending physician and soon afterward a perineal section—external urethrotomy—was performed with recovery of the patient.

One great trouble with traumatic urethral strictures, as also stated by Dr. Cutler, is their tendency to recontract. I believe, therefore, that all of these cases, even after they have been operated upon, should be instructed not only to pass a sound occasionally, but use the sound more or less regularly during the remainder of their lives, because it is certain that sooner or later there will be recontraction of the stricture.

I recall a case seen in the city hospital several years ago, when I was in charge of the urological department, a carpenter who had traumatic stricture of the urethra of twenty or twenty-five years duration. There was a dense mass of cicatricial tissue that resisted introduction of the sound. In my opinion we should not lose much time in operating upon such patients. A free opening should be made giving abundant opportunity for drainage.

Another point mentioned and which I desire to emphasize is the stand he takes against suprapubic puncture. I have seen some very disastrous results from this procedure. If conditions are such that perineal section cannot be performed promptly, it is much safer to resort to suprapubic cystotomy and introduce a catheter for drainage rather than puncture the vesical cavity blindly by means of a cannula.

It is well to remember that traumatic urethral strictures of long standing cannot be successfully dilated. External urethrotomy is the procedure of election in such cases, followed by the passage of sounds at regular intervals to prevent recontraction.

Henry J. Farbach: Fortunately in my entire experience I have seen only one patient with

traumatic stricture of the urethra. That man was working on parallel bars in the gymnasium and fell off the bar striking on his perineum, rupturing his urethra. This case was successfully treated by means of an indwelling catheter followed later by dilatation. He had symptoms of urinary obstruction about the fourth day, but made a satisfactory recovery with perfect function of the urethra.

The case reported by Dr. Cutler is especially interesting because of the length of time elapsing between the injury and the development of acute retention.

Leon L. Solomon: I shall of course not discuss the case from the urological standpoint,—that belongs to the specialist. I would, however, emphasize a remarkable thing about this eight year old lad. A wagon, loaded with five hundred feet of green lumber, said to weigh twenty-one or twenty-two hundred pounds passed over the pelvis of the child, without doing any other structural damage than rupturing the urethra.

We are told the boy was in no sense disturbed by the accident. There was no shock; he did not vomit; a small quantity of blood tinged urine was passed; he wanted to go out to play the next morning.

No symptom of damage to urethra, as Dr. Cutler has said, appeared, until sometime later, at which time, after failing to get into the bladder, the case was referred to the clinic. Under Dr. Cutler's care, the result, so interestingly described in his report, was achieved. I congratulate him on the outcome.

Irwin H. Cutler (in closing): I thank the gentlemen for their discussion of my report. I agree with Dr. Palmer that after external urethrotomy for traumatic stricture, the patient should be watched the remainder of his life and dilatation practiced at intervals to prevent recontraction. Too often, however, patients with urethral stricture neglect themselves until forced by diminishing urinary stream to consult their physician for relief.

The case mentioned by Dr. Farbach is interesting from the fact that the patient obtained relief from a traumatic urethral stricture by introduction of the indwelling catheter. The majority of these cases require operation, and external urethrotomy is the procedure of choice.

WOMAN'S AUXILIARY NOTES

DAVIESS COUNTY ORGANIZES

The Woman's Auxiliary, Daviess County Medical Society, was organized April 1, 1927, at Owensboro.

The officers elected were:

President—Mrs. J. C. Hoover, Owensboro.

Vice-President—Mrs. R. E. Griffin, Owensboro.

Secretary—Mrs. O. W. Rash, Owensboro.

Treasurer—Mrs. A. L. Kinchloe, Owensboro.

The list of members to date, follows: Mrs. Lee Barrett, Whitesville, and Mrs. Ed Barr, Mrs. J. W. Barnhill, Mrs. W. E. Berry, Mrs. Ellis Carpenter, Mrs. J. T. Dixon, Mrs. D. W. Griffith, Mrs. R. E. Griffin, Mrs. R. M. Hathaway, Mrs. I. J. Hoover, Mrs. J. C. Hoover, Mrs. Louis Igleheart, Mrs. A. L. Kinchloe, Mrs. R. McGary, Mrs. H. K. Osborne, Miss Irene Osborne, Mrs. O. W. Rash, Mrs. C. M. Rice, Mrs. R. L. Schraeder, Mrs. F. M. Sherman, Mrs. W. F. Stierman, Mrs. J. H. Thorpe, Mrs. M. H. Walker, all of Owensboro.

OUR ANNUAL MEETING

The Fourth Annual Meeting of the Woman's Auxiliary, Kentucky State Medical Association, will be held October 3-6 in Owensboro at the time of the Seventy-Sixth Annual Meeting of the Kentucky State Medical Association.

We have been assured that both meetings will be full of interest, profitable to all who attend. The Owensboro profession promises a genuine, old-fashioned, Kentucky welcome, and urges that all the women come and bring their doctor husbands and fathers.

Bring your copy of the Woman's Auxiliary number, Kentucky Medical Journal (December 1926 issue) with you to the Annual Meeting in Owensboro.

Is there a copy of the current issue of Hygeia on Your Doctor's desk?

POPULAR AND AUTHENTIC

For years, the medical profession and the general public have been asking for a regular magazine that would present health facts and reliable health teaching in plain English that is easily reliable. In response to the request the American Medical Association, the largest and the most progressive body of organized medical men in the world, now publishes monthly the health magazine known as Hygeia.

Hygeia discusses health in a new, interesting and authentic manner. Alluring illustrations in every issue make the timely health suggestions and practical ideas more attractive to mothers, fathers, children, teachers, nurses, doctors, dentists—in fact everybody. It tells you how to

keep well and what the physician knows about air, diet, clothing, exercise, rest, sleep, care of infants and children, the convalescent and the aged. It is the one magazine that should be found on the waiting room table in every doctor's office for, while entertaining the waiting patient, Hygeia reinforces the health teaching the physician is always attempting to impress upon his patients and their families.

The American Medical Association has requested that the Woman's Auxiliary assist the Association by helping to increase the circulation of this excellent, ever-ready, health teacher. The subscription price of Hygeia is \$3.00 per year or \$5.00 for two years. A generous commission is offered the Auxiliary on every subscription obtained. In order to secure this commission, however, all orders for subscriptions should be sent to the American Medical Association on the regular Hygeia subscription blanks or on the green report sheets. These subscription blanks and report sheets may be obtained by writing your County Chairman for Hygeia or to Miss Mayme Sullivan, State Chairman for Hygeia, 532 West Main, Louisville, or the request may be sent direct to the American Medical Association, 535 North Dearborn Street, Chicago, Illinois.

Let each one of us women of the profession in Kentucky do our bit in response to the request of the American Medical Association.

First, let us make sure that the new issue of Hygeia is laid on our doctor's office table the first of each month.

Second, let us put a copy on our own living room tables the first of each month.

Third, let us introduce Hygeia to all our friends and secure as many subscriptions as possible.

Some physicians send subscriptions to Hygeia to their patients and families for Christmas gifts. A fitting remembrance, indeed.

In Colorado, the Woman's Auxiliary sent subscriptions to Hygeia to the public health nurses of the State.

In Minnesota, the Woman's Auxiliary sent subscriptions to Hygeia to all the legislators and in Missouri, the Woman's Auxiliary obtained one thousand two hundred and six subscriptions from doctors, dentists, nurses, teachers and private individuals during the year 1926-27.

What will the Woman's Auxiliary of the Kentucky State Medical Association do? Just what you and I do. Let's do it now.

NEWS ITEMS

Dr. Robert L. Kelly announces the removal of his offices from 720 Francis Building to 408 Francis Building. Practice limited to Dermatology. Phone City 746. Office hours 9-12, 2-5.

Kentucky Medical Journal

Published Monthly By
THE KENTUCKY MEDICAL JOURNAL
Incorporated

Entered as second class matter October 22, 1906, at the Postoffice at Bowling Green, Ky., under act of Congress, March 3, 1879.

Subscription Price\$5.00
Edited Under Supervision of the Council

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Dental Prophylaxis

George H. Heyman Louisville

COUNTY SOCIETY REPORTS

Scott: The Scott County Medical Society met at 2 p. m. in the office of the Scott County Health Department, with Dr. H. H. Roberts, Vice-President. The following members present: Dr. H. H. Roberts, E. A. Anderson, C. T. Lancaster, W. S. Allphin, H. V. Johnson, E. C. Barlow, and S. S. Ammerson.

The minutes of the previous meeting were read and adopted.

By resolution the Secretary is instructed to notify all members of this society of the contemplated Tubercular Clinic for August and asking the doctors to fully cooperate by sending patients for examination.

C. T. Lancaster presented a clinical patient (Mr. Smith) for examination by members of society, and case was carefully examined and discussed.

The paper, "Care and Technique of Obstetric From Conception Until Birth," was read by Dr. Johnson which was ably prepared and much enjoyed by all present showing the interest created. Dr. Anderson discussed the paper very ably and complimented this most interesting paper.

W. S. Allphin complimented the paper, as did Dr. Lancaster, giving some experiences, valuable suggestions from the past long service in this field. Dr. Ammerson complimented the paper very highly, also giving some clinical experiences at the bedside. Dr. Johnson closed the discussion by stressing a few salient points in his paper.

E. C. BARLOW, Secretary pro tem.

Franklin: At a called meeting of the Franklin County Medical Society in the office of Dr. E. C. Roemele on June 27, 1927, to take action on the resignation of Dr. Flora Mastin, Secretary-Treasurer of the Society, which was made necessary by the recent appointment of Dr. Mastin as Assistant Resident Physician in the Eastern Kentucky State Hospital for the Insane, Lexington, Kentucky.

The following members were present: Doctors Travis, Lyons, Roemele, Heilman, C. T. Coleman, Budd, Jackson, Coblin, Youmans and Minish.

The meeting was presided over by the President, Dr. Travis. Dr. Roemele acting as temporary Secretary.

The resignation of Dr. Mastin was read and accepted. Dr. Minish was then unanimously elected to succeed Dr. Mastin as Secretary-Treasurer.

A motion was made and seconded and carried unanimously that a committee of three be appointed by the Chairman to arrange for a farewell dinner to be given in honor of Dr. Mastin on the evening of June 30th. The President ap-

pointed Doctors Roemele, Coleman and Minish. The same committee was authorized to purchase a suitable gift for Dr. Mastin to be presented at the dinner.

A committee consisting of Doctors Budd and Coblin was appointed by the President to draft the following resolutions concerning Dr. Mastin leaving our city, copies of which were sent to Dr. Larue, Superintendent of the Eastern State Hospital, The Kentucky State Medical Journal, Kentucky State Journal and a copy to be spread upon the minute book of this Society.

Whereas we have learned with deep regret that Dr. Flora Mastin is leaving Frankfort to become associated with the medical staff of Eastern State Hospital, it is with sorrow that we are compelled after all the years of constant association with her to lose her as an active member of our society. Our loss will be the gain of your institution.

We appreciate the fact that her ability as a physician and her congenial disposition as a lady will add much to the credit of your State Institution. With very best wishes for the success of your institution with her addition to your staff and expressing our sincere sorrow at losing Dr. Mastin from our midst and with the hope that her association with you may be as happy as has been her relation with the members of the Franklin County Medical Society, we are very sincerely yours, R. B. Guinn, S. C. Roemele, G. R. Budd, R. W. Coblin, G. H. Heilman, M. C. Darnell, F. M. Travis, L. T. Minish, C. T. Coleman, C. E. Youmans, A. M. Jackson, John Paterson, Joe Barr.

The society meets the first Thursday of each month at 11:30 a. m. at the Capitol Hotel and we have not missed a session for more than three years.

We have a plan just inaugurated by which one member of the Society shall be responsible for the program each month. The membership will be taken alphabetically. We are planning to invite one of our neighboring county societies each month to be our guests.

L. T. MINISH, Secretary.

BOOK REVIEWS

TEXTBOOK ON DISEASES OF THE SKIN AND SYPHILIS designed for the use of students and practitioners. By Albert Strickler, M. D., Professor of Dermatology and Syphilology, Temple University Department of Medicine; Dermatologist to the Samaritan Hospital; Consulting Dermatologist to the Home for Deaf Children and to the Northeastern Orphans Home; Former Associate in Dermatology and Syphilology, Jefferson Medical College; Former Assistant Dermatologist, Jefferson Hospital, Etc. With 218 illustrations, including 6 full page plates, some in

colors. F. A. Davis Company, Publishers.

The aim of this treatise is to present to the student and to the general practitioner a textbook on dermatology constructed on sound pedagogical principles. The author's experience as a teacher has shown him the need of such a treatise.

Since the lesions in cutaneous diseases are, as a rule, visible it is reasonable to argue that the acquisition of dermatologic knowledge should be easy. On the contrary, it is most difficult.

A principle in all teaching—and medicine offers no exception—is to place as little reliance as possible on memorization of facts and as much as possible logic. The object sought in this volume is, to so present the pathologic, the clinical and therapeutic facts as to render the clinical clear on the basis of the pathologic and the therapeutic sound on the basis of the pathologic and clinical.

Attention is particularly called to the following features:

In the presentation of formulæ for local use, the exact purpose of each ingredient is indicated. In the consideration of the differential diagnosis of the more important diseases, use is made of the tabular form as the method most advantageous for study and quick reference. The author has endeavored to subdivide the facts relating to each disease, under the following captions: eruption, description, progress, distribution, subjective and objective symptoms, etc., with the thought that it would make the study more comprehensive and systematic.

THE SURGICAL CLINICS OF NORTH AMERICA (Issued serially, one number every other month.) Volume VI, number VI, (New Jersey Number—December 1926.) 318 pages; 93 illustrations and complete Index to Volume VI. Per Clinic year (February 1926 to December 1926.) Paper, \$12.00; Cloth, \$16.00 net. Philadelphia and London: W. B. Saunders Company.

AN OUTLINE HISTORY OF OPHTHALMOLOGY. By Thomas Hall Shastid, A. M., F. A. C. S., Cc. D., LL B. Tenth Avenue Medical Building, Duluth, Minnesota.

Published by the American Optical Company, Southbridge, Massachusetts. Price \$1.25. George Wahr, Selling Agent, Ann Arbor, Michigan.

This very valuable small volume contains a brief history beginning with Babylon-Assyrian era, 2250 B. C.

He describes very dramatically the first cataract operation, by Daviel in 1745.

As the author says "This is an attempt to state the History of Ophthalmology in forty-five minutes.



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ANNUAL NUMBER

KENTUCKY

MEDICAL JOURNAL



THE KENTUCKY
OF MEDICINE

SEP 30 1927

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No. 9

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Ready—Ford's Bacteriology

The work presents a definite study of those microorganisms commonly encountered in medicine, comparative pathology, hygiene and public health.

It is divided into six parts: Part I treats of general bacteriology, discussing the historical aspect, morphology, bacterioscopic methods and technic, vital activities of bacteria, cultivation and media, and their destruction. Part II is concerned with systematic bacteriology. Part III, distribution of bacteria. Part IV, in a chapter of 100 pages, covers infection and immunity, and includes, among other subjects, the principles of infection, mixed infections, infection before birth, natural and acquired immunity, phagocytosis, opsonins and bacteriotropins, toxins and antitoxins, the bacteriophage. Part V is devoted entirely to the spirochetes, while Part VI discusses infectious micro-organisms of undetermined character.

Dr. Ford has selected his material, not from the literature, but from his own observations of clinical cases, autopsies, intestinal contents in health and in disease, samples of soil, water, milk and food.

The anaerobic bacteria and the principal aerobic spore-bearing species are discussed at length because of their importance to the physician and the hygienist. The illustrations are carefully made free-hand drawings, under magnification, giving details of structure which are impossible to obtain with photographs.

By WILLIAM W. FORD, M. D., Professor of Bacteriology, School of Hygiene and Public Health, Johns Hopkins University, Octavo of 1069 pages, illustrated. Cloth, \$8.50 net.

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PRESIDENT KENTUCKY STATE MEDICAL ASSOCIATION, 1927



KENTUCKY MEDICAL JOURNAL

BEING THE JOURNAL OF THE KENTUCKY STATE MEDICAL ASSOCIATION

Published Under the Auspices of the Council

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EDITORIAL

OWENSBORO WELCOMES YOU

Owensboro is proud of the honor of being your host for the annual meeting of the Kentucky State Medical Association. Already the Chamber of Commerce, Civic Clubs, and the rank and file of Owensboro's citizens are falling in line solidly behind the Daviess County Medical Association, and are giving their full cooperation and support to the plans now being made for your entertainment. Owensboro wishes and expects your visit to be pleasant—one that will remain long in your memory as worth while in every way.

OWENSBORO—CONVENTION CITY

Owensboro—most beautiful city on the beautiful Ohio—a wonderful place to visit and a wonderful place to live. High above the beautiful Ohio rises Owensboro, the great river flowing on majestically below, in a graceful curve as though caressing its fair city.

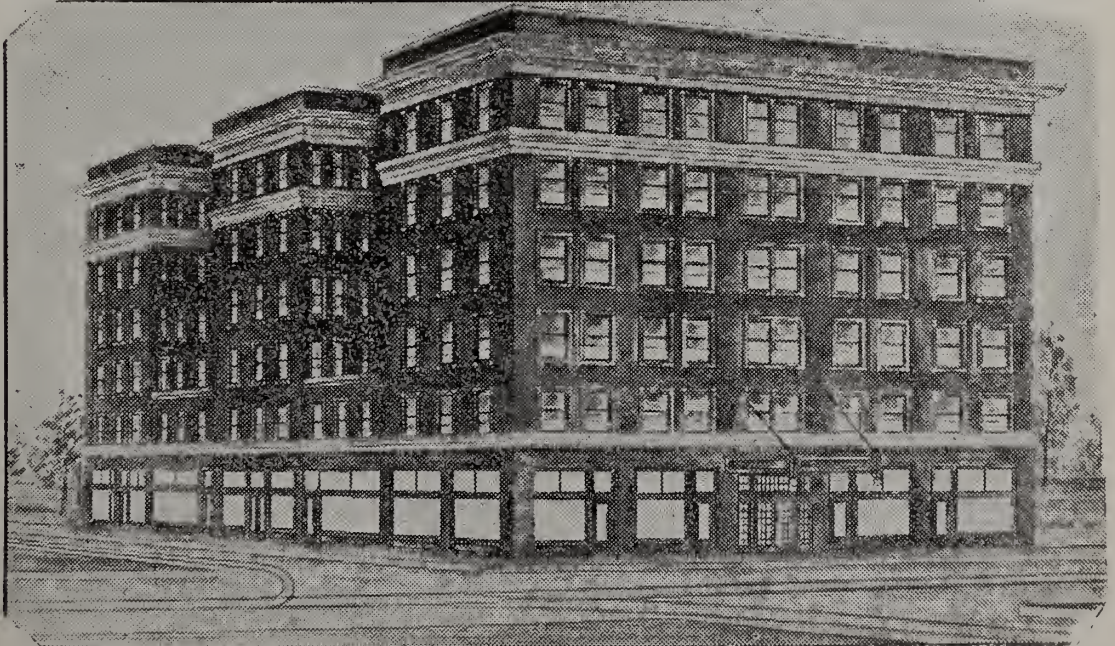
The most generous, warm-hearted and hospitable people dwell in Owensboro. The latch string is always out in Owensboro, and a genuine hearty Kentucky welcome awaits the stranger—who ceases to be a stranger, once he

enters Owensboro.

Owensboro, a city of homes, happiness and content—the best of all that makes life worth while. Wide, smooth, paved streets and avenues shaded by magnificent trees, bordered by stately buildings of commerce and trade and beautiful homes. A city spotlessly clean and beautiful—the first impression to greet the visitor. Unframed, yet a picture—beyond any earthly artist—the work of the great Master.

Everything the greatest city has to offer in the way of comfort and entertainment, has Owensboro, with none of the large city's inconveniences, and plus a spirit of neighborliness and friendliness that is not often met with, and that has to be enjoyed to be appreciated.

Hotel accommodations in Owensboro are ample and equal to the best to be found anywhere. All visitors will be taken care of and made comfortable during their stay. The Hotel Owensboro, recently completed at a cost of over half a million dollars, contains one hundred and fifty outside rooms with bath, and is excelled by no hotel anywhere, in the excellence of its cuisine, appointments and



Owensboro Hotel, Owensboro, Ky.

service, and the rates are most reasonable. Owensboro possesses four other first class hotels. The Rudd, The Planter House, The Whitley and The Bell Hotel. All are centrally located and can be reached either by street car or taxi from the Owensboro Union Station.

Visitors will find at all times a variety of entertainment at Owensboro's theatres. The Empress a most finely appointed theatre of moderate size, shows first run pictures exclusively, which visitors have often stated are shown here before they have been run in theatres in cities many times the size of Owensboro. The Bleich is another modern theatre showing both motion pictures and vaudeville. The Grand, with a seating capacity of over 1,500 is devoted to dramatic attractions, light operas, revues and musical comedy. The stage of The Grand is exceptionally wide and deep. The very largest attractions on the road are easily accommodated.

Owensboro is a shopping center. Numerous up-to-date department stores carry extensive stocks of goods of the latest fashion, at prices that will be found most reasonable for the quality of the merchandise. Owensboro merchants, wholesale and retail, are accustomed to supplying the needs of a prosperous and discriminating clientele throughout a wide expanse of territory in Western Kentucky.

Owensboro is an ideal convention city. Ask your Fire Chief. No doubt he was here at the Convention of the Kentucky State Fire Chiefs and Firemen Association in June of this year. Owensboro takes pride in the fact that many of the chiefs were kind enough to say that their meeting in Owensboro was the most successful of any ever held by the Association.

OWENSBORO'S PARK SYSTEM.

Owensboro boasts of many beautiful parks, easily accessible by street car or automobile, where the busy city-worker may for a space find recreation and pleasure in the association with and the contemplation of the beauties of nature.

Legion Park has its magnificent groves of trees, with green grass, flowers and graveled paths, winding in and out, cool and inviting on the hottest days, with comfortable seats conveniently placed to invite the favored visitor to pleasant rest and reflection amid beautiful surroundings on all sides. The Zoo nearby, with its many kinds of wild life, game birds and animals, also has its attractions for the grown-ups as well as the little folks.

Chautauqua Park, a lovely place, made so both by nature and by man, is located in the picturesque and scenic region southeast of Owensboro known by the truly descriptive name of "Seven Hills," reminiscent of the ancient mistress of the world—Rome. Amid wonderful old forest trees and weeping wil-



Owensboro Country Club, Owensboro, Kentucky

lows, winds with many a turn and graceful curve, a peaceful little stream, fed by springs, stocked with quick darting gold-fish by the City Fathers of long ago. On the bosom of this beautiful little stream a delightful hour may be spent in a boat rowing or floating idly with the current among the luxuriant growth of water lilies communing with nature. Metallic colored iridescent dragon flies, bright butterflies and song-birds flitting back and forth busily for your diversion and entertainment. Then a visit can be paid to the herd of deer, including a number of bucks, does and graceful little fawns that are quite tame and very much at home at Chautauqua Park. Swimming may be enjoyed during the Summer in a large pool nearby, with bath-houses for both men and women.

Riverview Park overlooks the magnificent sweep of the Ohio River as it flows past Owensboro, and is a delightful place to spend a few hours on an afternoon or summer night. Unfolded before you is an almost unlimited expanse of productive country, with the noble river flowing past as far as the eye can follow, on its way to the ocean. Motorboats and rowboats may be rented at a nominal cost for most pleasant excursions on one of the great rivers of our country. A regular ferry service is also maintained to Willow Beach, located on a wooded island directly opposite Riverview Park, but one mile away owing to the great width of the river. There one will find a gentle shelving beach of the purest Ohio River sand, that affords an opportunity for swimmers of all degrees of proficiency to display their aquatic skill in plain and fancy diving from the diving boards of different heights provided, or in swimming out to the barges and floats placed some distance off-shore for a sun bath. On the shore is a roofed-over dancing pavilion, with orchestra during the season, and refreshment booths and bath-houses amid groves of trees that afford a most welcome shade after a time spent in the sunlight on the beach.

The Owensboro Country Club, just south of the city limits, has a well laid out golf course,



Owensboro City Hospital, Owensboro, Kentucky

a fine club-house, swimming pool beautiful surroundings and a staff that takes a pride in their service. All who visit there will recall the occasion with pleasure long afterward.

Southside Park has a fine baseball diamond, with grandstands affording adequate and comfortable seating arrangements under roof during games.

The Daviess County Fairgrounds, south of Owensboro, has an excellent mile track, grandstands and all necessary buildings needed to present a real old-fashioned county fair in the fall of each year.

Indian Lake, a short half-hour drive from Owensboro, situated amid the most beautiful and rugged scenery, is fed by springs, and is nearly one-half mile long. The member owners have stocked it with game fish and built a comfortable club-house. At this delightful spot bathing, boating and fishing may be enjoyed to the fullest extent in ideal surroundings.

Owensboro also boasts of a Gun Club that holds matches at stated intervals, as well as an active Fish and Game Protective Association. Fishing may be enjoyed by all, either on the Ohio River or in Green River after a short drive over good roads. Good hunting may also be had at places easily reached from Owensboro.

PUBLIC HEALTH

Health conditions are good, and the death rate at Owensboro is among the lowest in the country.

A full time Health Department is maintained with a Director and nurses in charge, also a well equipped laboratory in charge of a qualified technician.

The City of Owensboro owns and maintains a 100-bed hospital complete with all modern equipment, and a full staff of physicians, surgeons and nurses.

A municipally owned plant furnishes an abundant supply of water from twenty-five deep wells, and is known by chemical analysis to be absolutely pure.

The Standard Milk Ordinance approved by the State Board of Health became effective on July first of this year. About fifteen dairies are expected to qualify as producers of grade "A" raw milk.

The new plant of the Evansville Pure Milk Co., completed at a cost of over \$40,000 assures Owensboro a supply of pasteurized milk and ice-cream of absolute purity.

The Daviess County Anti-tuberculosis Association is an active organization and doing a great work in stamping out tuberculosis.

Owensboro is fortunate in the fine attainments of its physicians and surgeons, and in having such an organization as the Daviess County Medical Association in the community.

CIVIC ORGANIZATIONS

Among the organizations working for the advancement and upbuilding of Owensboro as a community are: The Chamber of Commerce, composed of the leading business and professional men of the city, three civic clubs, Rotary, Lions, and Optimists, the American Legion, Womans Club, and others. The Elks, Masons, Knights of Columbus, Odd Fellows, Moose, Y. M. C. A. and Y. W. C. A. own and maintain commodious and beautiful buildings, club-houses and homes in which to center their activities.

At work for the advancement of agriculture and the building up of the fine farming country surrounding Owensboro, are a County Agent and a Home Demonstrator with an office in the city with necessary clerical assistants to carry on the work in the best approved way. The Agricultural and Live Stock Improvement Association, composed of Owensboro business men and farmers banded together to forward the best interests of Agriculture, is cooperating with the County Agent and the Home Demonstrator in their work.

CHURCHES AND SCHOOLS

Thinking along religious lines, Owensboro may well be said to be a city of churches. All denominations are represented with popular and devoted pastors to care for the religious welfare of the community. Fine church edifices are numerous, many of them erected at a cost of upwards of hundreds of thousands of dollars, and giving expression to the deep religious spirit of Owensboro.

Owensboro's educational facilities are seldom equaled in a city of this size. Numerous public schools, junior and senior high schools, as well as parochial schools, business college and night schools, offer every advantage for the education and development of Owensboro's boys and girls. The Senior High School is a model of all that a high school should be. It is housed in a modern building, recently completed at a cost of \$350,000, and has a concrete stadium capable of seating 1,-

500 people in connection with a fine athletic field for football, track events and other athletic contests. Among the student activities are a Dramatic Club, for which an auditorium and stage well equipped with necessary scenery is provided; the R. O. T. C. Cadet Corps, in charge of Major J. H. Earle, United States Army; the High School Band, Orchestra, Football and Basketball Teams, School Cafeteria, School Bank and Restaurant-lunch room, which are all run and manned by the students themselves.

A Carnegie Library is located at Owensboro with a trained librarian and an assistant in charge. The Library has over 15,000 volumes on the shelves, and a host of readers throughout the city.

OIL FIELDS AND COAL

Though it has not yet become generally known, Owensboro is the center of an extensive oil field, well along in the process of development. Present production is around 4,000 barrels daily, and growing. The oil fields are easily accessible, being only a few miles east and south of Owensboro, and are well worth a visit. From evidence disclosed by drilling, this country was once the bed of a mighty ocean. Fossils of pre-historic forms of sea life and shell-fish long extinct are almost daily brought to the surface by the drillers, who are probing the bowels of the earth for the black gold—petroleum. This is all most interesting, as is the question of the origin of the petroleum, on which the oil men and geologists are divided; some claiming it is of animal origin; while others affirm that it is of vegetable origin, produced in nature's work shops over long periods of time from the remains of mighty forests and the rank vegetation that covered the earth at the time when the coal deposits were laid down. Those of a scientific bent may investigate at first hand this interesting subject by coming to Owensboro and visiting the oil fields.

Extensive deposits of coal, with a number of mines in operation the year round, are located



Library Building, Owensboro, Kentucky

three miles west of Owensboro. This assures Owensboro an abundant supply of coal at all times, at an unusually low cost, on account of the elimination of high freight rates that have been paid to get coal to cities that are not so fortunately situated.

MANUFACTURES

Owensboro is the second city in Kentucky, in variety and value of its manufactures, according to the U. S. Census figures.

It is the largest tobacco market in Western Kentucky—over 35 million pounds of tobacco are sold over Owensboro loose leaf floors each season.

Owensboro has the largest manufacturers of balanced ration feeds for live stock and poultry located in the State of Kentucky. Their brands of feed are known and sold throughout the Southland.

Radio Tubes, Incandescent Electric Lamps, and Cigars that are nationally sold, are manufactured at Owensboro, in large modern factories, employing hundreds of young women, who alone have the dexterity requisite for performing the exact and delicate operations involved in the manufacture of these articles.

Furniture for the dining room and living room, Chairs, Church Furniture, as well as Farm Wagons, Self-contained Flour Mills and Feed Mills, Martin Ditchers and Graders, Face Brick in beautiful and permanent shades of red, pink, orange, chocolate and dark brown to blue-black, made from high grade clay obtained from beds that are practically inexhaustible, and many other articles having a wide distribution and sale are manufactured at Owensboro.

Members of the Kentucky State Medical Association who may desire to visit the plants of Owensboro manufacturers will be welcome to do so and such visits will prove most interesting as well as instructive.

The products of Owensboro manufacturers are shipped to far off countries all over the world.

Owensboro's Green River Type Tobacco is



Owensboro Senior High School, Owensboro, Kentucky

esteemed highly on the Gold-Coast of Africa, where many a dusky native exchanges the products of his country for this tobacco and finds solace in it and uses it as well for currency.

Anglo-American self-contained flour mills are at work turning out pure white flour, a new luxury of civilization brought to the teeming millions of China and India by the enterprise of the Owensboro manufacturer.

Martin Ditchers and Graders are ditching and terracing farm lands and grading roads in South America or far away Australia.

Owensboro Wagons are hauling heavy loads of sugar cane to the Sugar Centrals in Cuba.

Probably one-half of the pure whiskey for medicinal use now in the United States is stored in Government Bonded Warehouses at Owensboro; among which are many famous brands, such as the late Colonel John W. McCulloch's "Green River"—"The Whiskey Without a Headache"—which in the past have carried the name and fame of Owensboro the length and breadth of this land, as well as throughout the world.

OWENSBORO'S PRIDE

The best Fire Department in the United States made it possible for Owensboro to win the first prize in the Chamber of Commerce of the United States of America Inter-Chamber Fire Waste Contest of 1926 for cities up to 50,000 population. A silver and bronze plaque was awarded and is displayed at the headquarters of the Owensboro Chamber of Commerce evidencing this achievement.

Owensboro's Light and Water Plants are municipally owned. Water, pure and crystal clear is obtained from deep wells—the cost to the consumer being negligible. The electric current rate for lights is 4 1-2 cents, and the power rate 2 cents per kilowatt hour. Artificial gas for heating and cooking is supplied by a private company.

Owensboro's Street Car System is of the best. Regular service is maintained to all parks and points of interest, as well as to the business, residential and manufacturing districts.

Owensboro is the best paved city in Western Kentucky. The streets are wide, straight as an arrow and brilliantly lighted at night, the electric current being furnished by the City's municipally owned plant.

Owensboro boasts the only Symphony Orchestra in the State of Kentucky, as well as a Municipal Band, and numerous other orchestral organizations of different kinds, which may be heard at Owensboro theatres, hotels and luncheon clubs.

A Government Dam costing three and one-half million dollars will be completed this year at Owensboro. A fine harbor for river craft



Federal Building, Owensboro, Kentucky

is provided and a nine foot stage of water the year round.

An Airplane Landing Field is located at Owensboro, with buildings and hangars on the grounds.

The Alsop Process now in world-wide use for whitening and improving the quality of flour was invented by an Owensboro citizen, J. Nat Alsop, and developed in his laboratory at his country estate a few miles from Owensboro.

OWENSBORO FACTS

The present population of Owensboro is 25,000.

It is the trade center for the richest and most productive farm lands in the state of Kentucky.

The hub of the highway system of Western Kentucky, is only another name for Owensboro.

Train service to Owensboro is excellent, with three trunk line railroads, the L. H. & St. L. Railway, L. & N. Railroad and the Illinois Central System entering the city, and reaching with their own lines and those of their connections every part of Kentucky.

Boat Service—Six trips daily each way by fast passenger boats between Owensboro and Rockport, Indiana, ten miles above Owensboro on the Ohio River—a most delightful trip.

All roads lead to Owensboro, where the citizenship is native American, hospitable and generous—true Kentuckians.

THE OWENSBORO MEETING

The office is overwhelmed with letters from doctors all over the state, wanting the details of the Owensboro session. We are writing them to watch for the September Journal which will be a little late, because we have wanted to have the program and all the details in it.

The scientific program is particularly attractive. Dr. Caroline Hedger, of the Elizabeth McCormick Memorial Institute in Chicago

go, will be the orator of the Session. Doctor Hedger is the most versatile and popular medical speaker in this country. She is going to talk about the Importance of Diet in Mental and Physical Development and her address will be as outstanding in its interest as were those of Doctor Goldthwait last year.

The President's Address by Doctor Estill and the Orations in Medicine and Surgery by Doctors V. E. Simpson and Frank T. Fort of Louisville will be all unusually interesting.

The program has been arranged by Dr. John W. Scott, of Lexington, for the especial purpose of making it a postgraduate course in medical progress for the general practitioner. As you read over the titles we feel sure that you will find that every one of them will be of surpassing interest to you.

We desire to call your especial attention to the program for Thursday, the third day of the meeting. For the last two or three years we have been developing this third day. The most interesting and instructive discussions of the session have been given to its papers. Thursday morning will be devoted to obstetrics, in which every physician in the State is interested. The afternoon subjects are also of great value to practicing physicians.

The Daviess County Medical Society has arranged a most interesting social program. The Owensboro banquets of previous annual sessions have left behind pleasant and historic impressions on the medical profession of Kentucky. Owensboro has ample hotel facilities and if you will write Dr. R. E. Griffin of Owensboro, he will arrange for just the accommodations you are looking for.

The Woman's Auxiliary has grown since last year by leaps and bounds, not only in Kentucky but in every state. Its importance warrants your bringing your wife to Owensboro. Daviess County Woman's Auxiliary has arranged a program which will keep our women busy and they will carry back home with them a lot of new suggestions to make their doctors' work easier and more effective.

Mark your calendar from October 3d to 6th with Owensboro. Drive or ride in early and remain to stay through the session.

PLEASE READ REPORTS

On other pages in this issue will be found the Constitution and By-Laws of the Kentucky State Medical Association, as adopted in 1902 at Paducah, with all of the amendments that have been made since. Members of the House of Delegates are especially urged to familiarize themselves with it, for it will be found interesting reading by every one who receives the JOURNAL.

It is especially important that the reports of officers, and particularly the financial re-

port of the Secretary and Treasurer, as audited, be studied in detail by every member of the Association. In a membership so large and democratic as ours there will arise from time to time criticism of financial items. Such criticism after the meeting is largely futile. The officers of the Association can expend no money except with the approval of the House of Delegates, and the time to consider expenditures is before and during the meeting. In the Auditor's report, there will be found an exactly audited statement of every penny expended. The House of Delegates will be completely in charge of the activities of the Association and can stop any expenditure of which they disapprove. In the same way they can inaugurate any activity which they consider of benefit to the profession or the people of the State. The Kentucky State Medical Association is the most democratic organization in the world, and is successful only in proportion as it expresses the will of its members.

It is suggested that the county societies which find themselves interested in any particular activity which the Association has undertaken should consider and talk the matter over fully with their delegates that their views may be presented to the House of Delegates.

Ample time has been arranged for the meetings of the House. Reference committees will be appointed by President Abell for the consideration of practically every phase of professional activity.

The Most Important War-Gases and the Diseases Caused by Them.—After a short historical outline Westermarck divides the gases into different groups, each of which causes its special disease with characteristic symptomatology and anatomic pathology and demands its own treatment. The two most important are the lung-irritating and the blister-causing gases. To the first group belong chlorine, chloroprine and phosgene. They cause edema of the lung. The hemoglobin may be increased to more than 120, the red blood cells to over 9,000,000. To prevent the pulmonary edema emetine chloride should be given subcutaneously. Stimulants, such as caffeine and camphor are indicated. The next group is the vesicant. To this belong mustard gas and "Lewisite." The first was used during the World War. The last has not yet been employed in war. Mustard gas is very poisonous, even in small amounts and cannot be detected by the sense of smell. It easily penetrates ordinary cloth. The pathologic-anatomic changes are many. "Lewisite" is a heavy oily fluid. It is resistant. A fatal dose on the skin is 1.5 cc.; it causes burns and arsenic poisoning. As a remedy benzyl alcohol, 100 Gm.; ethyl alcohol, 95 Gm., and glycerin, 4 Gm., is recommended.

OFFICIAL ANNOUNCEMENTS

**PRELIMINARY PROGRAM FOR THE
SEVENTY-SEVENTH ANNUAL MEET-
ING OF THE KENTUCKY STATE
MEDICAL ASSOCIATION, OCT-
OBER 3, 4, 5, 6, 1927 AT
OWENSBORO.**

Tuesday, October 4—9 A. M.

Call to Order by the President....Irvin Abell,
M. D., Louisville.

Invocation.

Address of Welcome.

Response to Address of Welcome.

Installation of President.

Address of President....R. Julian Estill, M. D.,
Lexington.

SCIENTIFIC SESSION.

Tuesday, October 4—10:00 A. M.

1. Feeding the Sick Baby....J. W. Bruce, M. D., Louisville.
2. Pyelitis in Infancy and Childhood..Thom-
as M. Marks, M. D., Lexington.
3. Tuberculous Meningitis in Infancy and
Childhood....T. Smith, M. D., Louis-
ville.

Special Order at 12 M.

ORATION IN MEDICINE.

Oration In Medicine....V. E. Simpson, M. D.,
Louisville.

Tuesday, October 4—2:00 P. M.

1. Poliomyelitis.....W. E. Gardner, M. D.,
Louisville.
2. The Significance of the Basal Metabolic
Rate....Walter S. Wyatt, M. D., Lex-
ington.
3. Early Recognition of Surgical Goitre....
Walter I. Hume, M. D., Louisville.
4. The Use of Iodine in Goitre—R. R. El-
more, M. D., Louisville.

SURGICAL SECTION.

Tuesday, October 4—7:30 P. M.

1. Endometrial Tumors....W. O. Bullock, M.
D., Lexington.
2. The Use of Silk in the Restoration of Ten-
don Function (Illustrated with mov-
ing pictures)....W. T. Graham, M. D.,
Richmond, Va.
3. The Bleeding Uterus....J. B. Lukins, M.
D., Louisville.

Wednesday, October 5—9:00 A. M.

1. Classification of Heart Disease.....John
Harvey, M. D., Lexington.
2. Cardiac Arrhythmias....Enmet F. Horine,
M. D., Louisville
3. Syphilitic Heart Disease....J. Rowan Mor-
rison, M. D., Louisville; H. V. Nol-
and, M. D., Louisville; Clyde Mc-
Neill, M. D., Baltimore, Md.

Special Order at 12 M.

ORATION IN SURGERY.

Eras or Epochs in Surgery....F. T. Fort, M.
D., Louisville.

Wednesday, October 5—1:30 P. M.

1. Digitalis Therapy....R. E. Smith, M. D.,
Henderson.
2. The Management of the Diabetic in His
Home.....Wm. A. Jenkins, M. D.,
Louisville.
3. Diet in the Treatment of Pernicious Anae-
mia—C. N. Kavanaugh, M. D., Lex-
ington.
4. Orthopedic Consideration of the Chronic
Arthritides....John D. Trawick, M.
D., Louisville.
5. Hyperthyroidism and Myocarditis....W. O.
Johnson, M. D., Louisville.

PUBLIC ADDRESS.

Wednesday, October 5—7:30 P. M.

Feeding in Relation to Mental and Physical
Health.....Caroline Hedger, M. D.,
Elizabeth McCormick Memorial In-
stitute, Chicago, Illinois.

Thursday, October 6—9:00 A. M.

1. Prenatal Supervision in Apparently Nor-
mal Pregnancy....W. T. McConnell,
M. D., Louisville.
2. Diagnosis and Treatment of Toxaemias of
Pregnancy....Alice N. Pickett, M. D.,
Louisville.
3. Indications For, and Technique Of, De-
livery by the Normal Passages..Wal-
ter B. Gossett, M. D., Louisville.

Thursday, October 6—1:30 P. M.

1. The Treatment of Peptic Ulcer....H. T.
Rivers, M. D., Paducah.
2. The Surgical Treatment of Meningitis,
with Report of Cases....R. Glen Spur-
ling, M. D., Louisville.
3. The Importance of Cystitis as a Symptom
of Surgical Lesions of the Urinary
Tract....S. C. McCoy, M. D., Louis-
ville.
4. The Treatment of Neuro-Syphilis....Jethra
Hancock, M. D., Louisville.

Note on Injections of Peptone in Treatment of Anaphylactic Phenomena.—Intradermal injections of peptone by the Pasteur Vallery-Radot and Blamoutier method, were employed by Chiray in three cases of hay-fever and in two cases of essential asthma. The results, he asserts, are encouraging. He emphasizes that one series of injections is usually insufficient, and that successive series may not exert any effect.

OFFICIAL CALL

THE SEVENTY-SEVENTH ANNUAL MEETING OF
THE KENTUCKY STATE MEDICAL ASSOCI-
ATION TO BE HELD AT THE SETTLE
MEMORIAL METHODIST CHURCH,
OWENSBORO

To the Officers and Members of the Component County Societies of the Kentucky State Medical Association:

The Seventy-Seventh Annual Meeting of the Kentucky State Medical Association will convene in the Settle Memorial Methodist Church, Owensboro, on Monday, Tuesday, Wednesday and Thursday, October 3, 4, 5 and 6, 1927.

THE HOUSE OF DELEGATES

The House of Delegates of the Kentucky State Medical Association will convene in the Main Auditorium Settle Memorial Methodist Church, at 2 p. m., on Monday, October 3, 1927.

FIRST GENERAL SESSION

The First General Session which constitutes the opening exercises of the scientific functions of the Association, will be held in the Settle Memorial Methodist Church, at 9 a. m., Tuesday, October 4, 1927.

THE COUNCIL

The Council will convene at the Settle Memorial Methodist Church, Monday, October 3, 1927, at 10:30 a. m.

THE REGISTRATION DEPARTMENT

The Registration Department will be open on the Ground Floor in the Settle Memorial Methodist Church from 10 a. m. to 5 p. m. on Monday, October 3; from 8 a. m. to 5 p. m. on Tuesday and Wednesday, October 4 and 5; and from 8 a. m. to 12 m., on Thursday, October 6, 1927.

COUNCILOR DISTRICTS

FIRST DISTRICT

V. A. Stilley, Benton, Councilor.
Crittenden Livingston
Fulton McCracken
Graves Marshall
Hickman Trigg
Lyon

SECOND DISTRICT

D. M. Griffith, Owensboro, Councilor.
Henderson Ohio
Hopkins Union
Muhlenberg Webster

THIRD DISTRICT

J. H. Blackburn, Bowling Green, Councilor.
Christian Monroe
Cumberland Metcalfe
Logan Warren-Edmonson
Todd Simpson

FOURTH DISTRICT

D. E. McClure, Elizabethtown, Councilor.
Hart Nelson
Larue Spencer
Meade Hardin

FIFTH DISTRICT

W. E. Gardner, Louisville, Councilor.
Shelby Jefferson
Franklin Trimble
Gallatin Henry

SIXTH DISTRICT

R. C. McChord, Lebanon, Councilor.
Marion Green
Anderson Washington
Merecer Taylor

SEVENTH DISTRICT

V. G. Kinnaird, Lancaster, Councilor.
Casey Jessamine Rockcastle
Clinton Lincoln Russell
Garrard Pulaski Wayne
McCready

EIGHTH DISTRICT

C. W. Shaw, Alexandria, Councilor.
Boone Harrison Robertson
Boarben Mason Scott
Bracken Nicholas Fleming
Campbell-Keaton Grant Pendleton

NINTH DISTRICT

W. L. Gambill, Ashland, Councilor.
Boyd Greenup Lawrence
Carter Johnson Magoffin
Elliot Pike
Floyd Lewis Martin

TENTH DISTRICT

S. B. Marks, Lexington, Councilor.
Bath Lee Montgomery
Breathitt Madison Morgan
Clark Menifee Powell
Payette Woodford Rowan
Wolfe

ELEVENTH DISTRICT

W. M. Martin, Harlan, Councilor.
Bell Jackson Leslie
Clay Kuox Whitley
Harlan Laurel Owsley
Knott Letcher Perry

CONSTITUTION AND BY-LAWS OF
THE KENTUCKY STATE MEDICAL ASSOCIATION ADOPTED
AT PADUCAH IN 1902 AS
AMENDED

CONSTITUTION

ARTICLE I.—NAME OF THE ASSOCIATION ..

The name and title of this organization shall be the Kentucky State Medical Association.

ARTICLE II.—PURPOSE OF THE ASSOCIATION

The purpose of the Association shall be to federate and bring into compact organization the entire medical profession of the State of Kentucky, and to unite with similar associations in other states to form the American Medical Association, with a view to the extension of medical knowledge, and to the advancement of medical science, to the elevation of the standard of medical education, and to the enactment and enforcement of just medical laws; to the promotion of friendly intercourse among physicians, and to the guarding and fostering of their material interest and to the enlightenment and direction of public opinion in regard to the great problems of state medicine, so that the profession shall become more capable and honorable within itself, and more useful to the public in the prevention and cure of disease, and in prolonging and adding comfort to life.

ARTICLE III.—COMPONENT SOCIETIES

Component Societies shall consist of those county medical societies which hold charters from this Association.

ARTICLE IV.—COMPOSITION OF THE ASSOCIATION

Section 1. This Association shall consist of Members, Delegates and Guests.

Sec. 2.—MEMBERS. The members of this Association shall be the members of the com-

ponent county medical societies.

Sec. 3.—DELEGATES. Delegates shall be those members who are elected in accordance with this Constitution and By-Laws to represent their respective component county societies in the House of Delegates of this Association.

Sec. 4.—GUESTS. Any distinguished physician not a resident of this State may become a guest during any Annual Session upon invitation of the Association or its Council, and shall be accorded the privileges of participating in all of the scientific work of that session.

ARTICLE V.—HOUSE OF DELEGATES

The House of Delegates shall be the legislative and business body of the Association, and shall consist of (1) Delegate elected by the component county societies, and (2) *ex-officio*, the officers of the Association as defined in Article VIII, Section 1, of this Constitution.

ARTICLE VI.—SECTIONS AND DISTRICT SOCIETIES

The House of Delegates may provide for a division of the scientific work of the Association into appropriate Sections, and for the organization of such Councilor District Societies as will promote the best interest of the profession, such societies to be composed exclusively of members of component county societies.

ARTICLE VII.—SESSIONS AND MEETINGS

Section 1. The Association shall hold an Annual Session, during which there shall be held daily not less than two General Meetings, which shall be open to all registered members, delegates and guests.

Sec. 2. The time and place for holding each Annual Session shall be fixed by the House of Delegates.

ARTICLE VIII.—OFFICERS

Section 1. The officers of this Association shall be a President, three Vice-Presidents, a Secretary, a Treasurer, and eleven Councilors.

Sec. 2. The President and Vice-Presidents shall be elected for a term of one year. The Secretary, Treasurer and Councilors shall be elected for terms of five years each, the Councilors being divided into classes so that two shall be elected each year. All of these officers shall serve until their successors are elected and installed.

Sec. 3. The Officers of the Association shall be elected by the House of Delegates on the morning of the last day of the Annual Session, but no Delegate shall be eligible to any office named in the preceding section, except that of Councilor, and no person shall be elected to any such office who is not in attendance upon the Annual Session, and who

has not been a member of the Association for the past two years.

ARTICLE IX.—FUNDS AND EXPENSES

Funds for meeting the expenses of the Association shall be arranged for by the House of Delegates by an equal per capita assessment upon each county society to be fixed by the House of Delegates, by voluntary contribution, and from the profits of its publication. Funds may be appropriated by the House of Delegates to defray the expenses of the Annual Session for publication and for such other purposes as will promote the welfare of the Association and profession.

ARTICLE X.—REFERENDUM

The General Meeting of the Association may, by a two-thirds vote, order a general referendum upon any question pending before the House of Delegates, and the House of Delegates may, by a similar vote of its own members, or after a like vote of the General Meeting, submit any such question to the membership of the Association for a final vote; and if the persons voting shall comprise a majority of all the members, a majority of such vote shall determine the question and be binding upon the House of Delegates.

ARTICLE XI.—THE SEAL

The Association shall have a common Seal with power to break, change or renew the same at pleasure.

ARTICLE XII.—AMENDMENTS

The House of Delegates may amend any article of this Constitution by a two-thirds vote of the delegates registered at that Annual Session, provided that such amendment shall have been presented in open meeting at the previous Annual Session, and that it shall have been sent officially to each component county society at least two months before the session at which final action is to be taken.

BY-LAWS

CHAPTER I.—MEMBERSHIP

Section 1. All members of the Component County Societies shall be privileged to attend all meetings and take part in all the proceedings of the Annual Session, and shall be eligible to any office within the gift of the Association. PROVIDED, that no physician may become a member of any county society unless he signs and keeps inviolate the following pledge:

I hereby promise upon my honor as a gentleman that I will not so long as I am a member of the Kentucky State Medical Association practice division of fees in any form; neither by collecting fees from others referring patients to me nor by permitting them to collect my fees for me; nor will I make joint fees with physicians or surgeons referring patients to me for operation or con-

sultation; neither will I in any way, directly or indirectly, compensate anyone referring patients to me nor will I utilize any man as an assistant as a subterfuge for this purpose.

Sec. 2. The name of a physician upon the properly certified roster of members, or list of delegates, of a chartered county society which has paid its annual assessment, shall be *prima facie* evidence of his right to register at the Annual Session in the respective bodies of this Association.

Sec. 3. No persons who is under sentence or suspension or expulsion from any component society of this Association, or whose name has been dropped from its roll of membership shall be entitled to any of the rights or benefits of this Association, nor shall he be permitted to take part in any of its proceedings, until such time as he has been relieved of such liability.

Sec. 4. Each member in attendance at the Annual Session shall enter his name on the registration book, indicating the component society of which he is a member. When his right to membership has been verified by receiving a badge which shall be evidence of his reference to the roster of the society, he shall have right to all privileges of membership at that session. No member or delegate shall take part in any of the proceedings of an annual session until he has complied with the provisions of this section.

CHAPTER II.—ANNUAL AND SPECIAL SESSIONS OF THE ASSOCIATION

Section 1. The Association shall hold an annual session, meeting every third year in the city of Louisville, and the other two years at some point in the State fixed at the preceding annual session.

CHAPTER III.—GENERAL MEETING

Section 1. The General Meeting shall include all registered members, delegates and guests, who shall have equal rights to participate in the proceedings and discussions; and except guests, to vote on pending questions. Each General Meeting shall be presided over by the President or in his absence or disability or upon his request, by one of the Vice-Presidents. Before it, at such time and place as may have been arranged, shall be delivered the annual address of the President, and the annual orations and the entire time of the sessions as far as may be shall be devoted to papers and discussions relating to scientific medicine.

Sec. 2. The General Meeting shall have authority to create committees or commissions for scientific investigations of special interest and importance to the profession and public, and to receive and dispose of reports of the same; but any expense in connection therewith must first be approved by the

House of Delegates.

Sec. 3. Except by special vote, the order of exercises, papers and discussions as set forth in the official program shall be followed from day to day until it has been completed.

Sec. 4. No address or paper before the Association, except those of the President and orators shall occupy more than twenty minutes in its delivery; and no member shall speak longer than five minutes, nor more than once on any subject.

Sec. 5. All papers read before the Association shall be its property. Each paper shall be deposited with the Secretary when read, and if this is not done, it shall not be published.

CHAPTER IV.—HOUSE OF DELEGATES

Section 1. The House of Delegates shall meet annually at the time and place of the Annual Session of the Association and shall so fix its hours of meeting as not to conflict with the first General Meeting of the Association, or with the meeting held for the address of the President and the annual orations and so as to give delegates an opportunity to attend the other scientific proceedings and discussion so far as is consistent with their duties. But if the business interests of the Association and profession required it may meet in advance or remain in session after the final adjournment of the General Meeting.

Sec. 2. Each component county society shall be entitled to send to the House of Delegates each year one delegate for every twenty-five members, and one for each major fraction thereof, but each county society holding a charter from this Association, which has made its annual report and paid its assessments as provided in this Constitution and By-Laws shall be entitled to one delegate. In case the regularly elected delegate or alternate is unable to attend the annual meeting of the Association, the President of the county society may in writing appoint an alternate, who shall have the rights and privileges of a delegate.

Sec. 3. A majority of the registered delegates shall constitute a quorum and all of the meetings of the House of Delegates shall be open to members of the Association.

Sec. 4. It shall, through its officers, Advisory Council, and otherwise, give diligent attention to and foster the scientific work and spirit of the Association, and shall constantly study and strive to make each Annual Session a stepping stone to further ones of higher interest.

Sec. 5. It shall consider and advise as to the material interest of the profession, and of the public in those important matters wherein it is dependent upon the profession,

and shall use its influence to secure and enforce all proper medical and public-health legislation, and to diffuse popular information in relation thereto.

Sec. 6. It shall make careful inquiry into the condition of the profession of each county in the State, and shall have authority to adopt such methods as may be deemed most efficient for building up and increasing the interest in such county societies as already exist and for organizing the profession in counties where societies do not exist. It shall especially and systematically endeavor to promote friendly intercourse between physicians of the same locality and shall continue these efforts until every physician in every county of the State who can be made reputable has been brought under medical society influence.

Sec. 7. It shall encourage post-graduate work in medical centers as well as home study and research and shall endeavor to have the results of the same utilized and intelligently discussed in the county societies. With these ends in view, five years after the adoption of the By-Laws no voluntary paper shall be placed upon the annual program or be heard in the Association which has not first been heard in the county society of which the author is a member.

Sec. 8. It shall elect representatives to the House of Delegates of the American Medical Association in accordance with the Constitution and By-Laws of that body in such manner that not more than one-half of the delegates shall be elected in any one year.

Sec. 9. It shall upon application provide and issue charters to county societies organized to conform to the spirit of the Constitution and By-Laws.

Sec. 10. In sparsely settled sections it shall have authority to organize the physicians of two or more counties to be designated by hyphenating the names of two or more counties so as to distinguish them from district and other classes of societies and these societies, when organized and chartered shall be entitled to all the privileges and representation provided herein for county societies, until such counties may be organized separately.

Sec. 11. It may divide the counties of the State into Councilor Districts, and, when the best interests of the Association and profession will be promoted thereby, organize in each district a medical society, to meet midway between the Annual Session of the Association and members of the chartered county societies and none other shall be members.

When so organized from the presidents of such district societies shall be chosen the Vice-Presidents of this Association and the

Presidents of the county societies of the district shall be the Vice-Presidents of such district societies.

Sec. 12. It shall have authority to appoint committees for special purposes from among members of the Association who are not members of the House of Delegates, and such committee may report to the House of Delegates in person, and may participate in the debate thereon.

Sec. 13. It shall approve all memorials and resolutions issued in the name of the Association before the same shall become effective.

Sec. 14. It shall present a summary of its proceedings to the last General Meeting of each Annual Session, and shall publish the same in the Journal.

CHAPTER V.—ELECTIONS OF OFFICERS

Section 1. All elections shall be by secret ballot, and a majority of the votes cast shall be necessary to elect, provided, however, that when there are more than two nominees the nominee receiving the least number of votes on the first ballot shall be dropped and the balloting continue until an election occurs in like manner.

Sec. 2. Any member known to have directly or indirectly solicited votes for or sought any office within the gift of this Association shall be ineligible for any office for two years.

Sec. 3. The election of officers shall be the first order of business of the House of Delegates after the reading of the minutes on the morning of the last day of the General Session.

Sec. 4. Nominations for President shall be called for by counties.

CHAPTER VI.—DUTIES OF OFFICERS

Section 1. The President shall preside at all meetings of the Association and of the House of Delegates; shall appoint all committees not otherwise provided for; shall deliver annual address at such time as may be arranged; shall give a deciding vote in case of a tie, and shall perform such other duties as custom and parliamentary usage may require. He shall be the real head of the profession of the State during his term of office, and so far as practicable, shall visit by appointment, the various sections of the State and assist the Councilors in building up the county societies and in making their work more practical and useful.

Sec. 2. The Vice-Presidents shall assist the Presidents in the discharge of his duties. In the event of his death, resignation or removal the Council shall elect one of the Vice-Presidents to succeed him.

Sec. 3. The Treasurer shall give bond for the trust imposed in him whenever the House of Delegates shall deem it requisite. He

shall demand and receive all funds due the Association, together with the bequests and donations. He shall, under the direction of the House of Delegates, sell or lease any real estate belonging to the Association and execute the necessary papers; and shall, in general subject to such direction, have the care and management of the fiscal affairs of the Association. He shall pay money out of the Treasury only on written order of the President, countersigned by the Secretary; he shall subject his accounts to such examinations as the House of Delegates may order, and he shall annually render an account of his doings and of the state of funds in his hands.

Sec. 4. The Secretary, acting with the Committee on Scientific Work, shall prepare and issue the program for and attend all meetings of the Association and of the House of Delegates and he shall keep minutes of their respective proceedings in separate record books. He shall charge upon his books the assessments against each component county society at the end of the fiscal year; he shall collect and make proper credits for the same, and perform such other duties as may be assigned to him. He shall be custodian of all record books and papers belonging to the Treasurer, and shall keep account of and promptly turn over to the Treasurer all funds of the Association which come into his hands. He shall provide for the registration of the members and delegates at the Annual Sessions. He shall keep a card index register of all the legal practitioners of the State by counties, noting on each his status in relation to his county society and upon request shall transmit a copy of this list to the American Medical Association for publication. In so far as it is in his power he shall use the printed matter, correspondence and influence of his office to aid the Councilors in the organization and improvement of the county societies and in the extension of the power and usefulness of this Association. He shall conduct the official correspondence, notifying members of meetings, officers of their election, and committees of their appointment and duties. He shall act as secretary of the Committee on Scientific Work. He shall be editor of the *KENTUCKY MEDICAL JOURNAL*. He shall employ such assistants as may be ordered by the Council or the House of Delegates. He shall annually make a report of his doings to the House of Delegates.

In order that the Secretary may be enabled to give that amount of time to his duties which will permit of his becoming proficient it is desirable that he shall receive some compensation. The amount of his salary shall be fixed by the House of Delegates.

CHAPTER VII.—COUNCIL

Section 1. The Council shall hold daily meetings during the annual session of the Association and at such other times as necessity may require, subject to the call of the Chairman or on petition of three Councilors. It shall meet on the last day of the Annual Session of the Association for re-organization and for the outlining of the work for the ensuing year. At this meeting it shall elect a Chairman and Secretary and it shall keep a permanent record of its proceedings. It shall through its Chairman, make an annual report to the House of Delegates at such time as may be provided, which report shall include an audit of the account of the Secretary and Treasurer and other agents of this Association, and shall also specify the character and cost of all the publications of the Association during the year, and the amounts of all other property belonging to the Association, or under its control, with such suggestions as it may deem necessary. In the event of a vacancy in any office the Council may fill the same until the next annual election.

Sec. 2. Each Councilor shall be organizer, peacemaker and censor for his district. He shall visit each county in his district at least once a year for the purpose of organizing component societies where none exist, for inquiring into the condition of the profession and for improving and increasing the zeal of the county societies and their members. He shall make an annual report of his doings, and of the condition of the profession of each county in his district to each Annual Session of the House of Delegates. The necessary traveling expenses incurred by Councilor in the line of his duties herein imposed may be allowed by the House of Delegates upon a proper itemized statement, but this shall not be construed to include his expenses in attending the Annual Session of the Association.

Sec. 3. Collectively the Council shall be the Board of Censors of the Association. It shall consider all questions involving the right and standing of members, whether in relation to other members, to the component societies, or to this Association. All questions of an ethical nature brought before the House of Delegates of the General Meeting shall be referred to the Council without discussion. It shall hear and decide all questions of discipline effecting the conduct of members or of a county society upon which appeal is taken from the decision of an individual Councilor. Its decision in all such cases shall be final.

Sec. 4. The Council shall have the right to communicate the views of the profession and of the Association in regard to health, sanita-

tion and other important matters to the public and the lay press. Such communications shall be officially signed by the chairman and secretary of the Council, as such.

Sec. 5. The Council shall provide for and superintend the publication and distribution of all proceedings, transactions and memoirs of the Association and shall have authority to appoint such assistants to the editors as it deems necessary. It shall manage and conduct the KENTUCKY MEDICAL JOURNAL, which is the organ of the Association, and all money received by the JOURNAL, the Council or any officer of the Association, shall be paid to the Treasurer of the Association on the first of each month.

Sec. 6. All reports on scientific subjects and all scientific discussions and papers heard before the Association shall be referred to the KENTUCKY MEDICAL JOURNAL for publication. The editor, with the consent of the Councilor for the District in which he resides may curtail or abstract papers or discussions, and the Council may return any paper to its author which it may not consider suitable for publication.

Sec. 7. All commercial exhibits during the annual session shall be within the control and direction of the Council.

CHAPTER VIII.—COMMITTEES.

Section 1. The standing committees shall be as follows:

A Committee on Scientific Work.

A Committee on Public Policy and Legislation.

A Committee on Medical Education.

A Medico-Legal Committee.

A Committee on Arrangements, and such other committees as may be necessary. Such committees shall be elected by the House of Delegates, unless otherwise provided.

Sec. 2. The Committee on Scientific Work shall consist of three members of which the President-elect shall be a member and Chairman, and the Secretary shall be a member and Secretary, and shall determine the character and scope of the scientific proceedings of the Association, subject to the provisions or the instructions of the House of Delegates or of the Association, or to the provisions of the Constitution and By-Laws. Thirty days previous to each annual session it shall prepare and issue a program announcing the order in which papers, discussions and other business shall be presented, which shall be adhered to by the Association as nearly as practicable.

Sec. 3. The Committee on Public Policy and Legislation shall consist of three members and the President and Secretary. Under the direction of the House of Delegates it shall represent the Association in securing and enforcing legislation in the interest of the public health and scientific medicine. It shall

keep in touch with the profession and public opinion, shall endeavor to shape legislation so as to secure the best results for the whole people, and shall utilize every organized influence in local, state and national affairs and elections. Its work shall be done with dignity becoming a great profession and with that wisdom which will make effective its work and influence. It shall have authority to be heard before the entire Association upon questions of great concern at such times as may be arranged during the annual session.

Sec. 4. The Committee on Arrangements shall consist of the component society in the territory in which the annual session is to be held. It shall by committees of its own selection, provide suitable accommodations for the meeting-places of the Association and of the House of Delegates, and of their respective committees, and shall have general charge of all arrangements. Its Chairman shall report an outline of the arrangements to the Secretary for publication in the program, and shall make additional announcements during the session as occasion may require.

Sec. 5. The Medico-Legal Committee shall consist of three members, one of whom, the Chairman, shall be elected by the Council for five years, and the Secretary and Treasurer shall be the other two members *ex officio*. This committee shall select and fix the compensation for an attorney, who shall act as General Counsel, and if required, additional local counsel. The Association through this Committee shall defend its members who are in good standing against unjust suits for malpractice.

CHAPTER IX.—ASSESSMENTS AND EXPENDITURES.

Section 1.—The assessment of five dollars per capita on the membership of the component societies is hereby made the annual dues of this Association. The Secretary of each county society shall forward its assessment together with its roster of all officers and members, lists of delegates, and list of non-official physicians of the county to the Secretary of this Association on the first day of January in each year.

Sec. 2. Any county society which fails to pay its assessment, or make the report required, on or before the first day of April in each year, shall be held as suspended, and none of its members, or delegates shall be permitted to participate in any of the business or proceedings of the Association or of the House of Delegates until such requirements have been met.

Sec. 3. All motions or resolutions appropriating money, shall specify a definite amount, or so much thereof as may be necessary for the purpose indicated, and must be ap-

proved by the Council and House of Delegates.

CHAPTER X.—RULES OF CONDUCT

The principles set forth in the Principles of Ethics of the American Medical Association shall govern the conduct of members in their relation to each other and to the public.

CHAPTER XI.—RULES OF ORDER

The deliberations of this Association shall be governed by parliamentary usage as contained in Roberts' Rules of Order, unless otherwise determined by a vote of its respective bodies.

CHAPTER XII.—COUNTY SOCIETIES

Section 1. All county societies now in affiliation with the State Association or those that may hereafter be organized in this State, which have adopted principles of organization not in conflict with this Constitution and By-Laws, shall upon application to the House of Delegates, receive a charter from and become a component part of this Association.

Sec. 2. As rapidly as can be done after the adoption of this Constitution and By-Laws, a medical society shall be organized in every county in the State in which no component society exists, and charters shall be issued thereto.

Sec. 3. Charters shall be issued only upon approval of the House of Delegates and shall be signed by the President and Secretary of this Association. The House of Delegates shall have authority to revoke the charter of any component county society whose actions are in conflict with the letter or spirit of this Constitution and By-Laws.

Sec. 4. Only one component medical society shall be chartered in any county. Where more than one county society exists, friendly overtures and concessions shall be made with the aid of the Councilor of the District if necessary, and all of the members brought into one organization. In case of failure to unite, an appeal may be made to the Council, which shall decide what action shall be taken.

Sec. 5. Each county society shall judge of the qualifications of its own members, but as such societies are the only portals to this Association, every reputable and legally registered physician who is practicing, or who will agree to practice non-sectarian medicine shall be entitled to membership. Before a charter is issued to any county society, full and ample notice and opportunity shall be given to every physician in the county to become a member.

Sec. 6. Any physician who may feel aggrieved by the action of the society of his county in refusing him membership, or in suspending or expelling him, shall have the

right to appeal to the Council, which, upon a majority vote may permit him to become a member of an adjacent county society.

Sec. 7. In hearing appeals the Council may admit oral or written evidence as in its judgment will best and most fairly present the facts, but in case of every appeal, both as a board and as individual councilors in district and county work, efforts at conciliation and compromise shall precede all such hearings.

Sec. 8. When a member in good standing in a component society moves to another county in the state, his name, upon request shall be transferred without cost to the roster of the county society into whose jurisdiction he moves.

Sec. 9. A physician living in or near a county line may hold membership in that county most convenient for him to attend, on permission of the society in whose jurisdiction he resides.

Sec. 10. Each county society shall have general direction of the affairs of the profession in the county, and its influence shall be constantly exerted for bettering the scientific moral and material conditions of every physician in the county; and systematic efforts shall be made by each member, and by the society as a whole, to increase the membership until it embraces every qualified physician in the county.

Sec. 11. Frequent meetings shall be encouraged, and the most attractive programs arranged that are possible. The younger members shall be especially encouraged to do post-graduate and original research work, and to give the society the first benefit of such labors. Official position and other preferences shall be unstintingly given to such members.

Sec. 12. At the time of the annual election of officers each county society shall elect a delegate or delegates to represent it in the House of Delegates of this Association in the proportion of one delegate to each twenty-five members or major fraction thereof, and the secretary of the society shall send a list of such delegates to the Secretary of this Association at least sixty days before the Annual Session.

Sec. 13. The Secretary of each county society shall keep a roster of its members, and a list of the non-affiliated registered physicians of the county, in which shall be shown the full name, address, college and date of graduation, date of license to practice in this State, and such other information as may be deemed necessary. He shall furnish an official report containing such information, upon blanks supplied him for the purpose, to the secretary of this Association, on the first

day of January of each year, or as soon thereafter as possible, and at the same time that the dues accruing from the annual assessment are sent in. In keeping such roster the Secretary shall note any changes in the personnel of the profession by death, or by removal to or from the county, and in making his annual report he shall be certain to account for every physician who has lived in the county during the year.

Sec. 14. The Secretary of each county society shall report to the KENTUCKY MEDICAL JOURNAL full minutes of each meeting and forward to it all scientific papers and discussions which the society shall consider worthy of publication.

CHAPTER XIII.—AMENDMENTS

These By-Laws may be amended by any Annual Session by a two-thirds vote of all the delegates present at that session, after the amendment has been laid on the table for one day.

AUDITOR'S REPORT

To the Delegates of the Kentucky State Medical Association:

GENTLEMEN: As requested I have made a complete audit of the books and accounts of your Secretary, Dr. A. T. McCormack, and your Treasurer, Dr. W. B. McClure, for the period of September 1, 1926 to and including September 1, 1927

All receipts were properly accounted for and every item of disbursements is represented by a voucher check signed by the proper officers, and bears the endorsement of the payee.

Every item of receipts and disbursements was followed through the books and found to be charged or credited to the proper account.

The exhibits herewith submitted set forth in detail the financial transactions from several angles and show the true condition of your affairs at this date.

I have also checked the receipts and disbursements, and distribution of funds of the Woman's Auxiliary of the State Medical Association covering period of September 1, 1926 to September 1, 1927 and find them correct as set forth in the several exhibits submitted herewith.

Respectfully,

B. P. EUBANK.

Reconciliation of the Treasurer's account for period September 1926 to September 1927, viz:

Balance on hand at last report.....	\$10,357.93
Less Vouchers then outstanding.....	1,211.83
Balance agreeing with Secretary's last report....	\$ 9,146.10
Amount received from Secretary for period.....	17,405.39
Total	\$26,551.49

DISBURSEMENTS

Expense	\$16,952.75
Investment, 2 1-M Bonds	1,989.44
(3 M. Liberty 2nds exchanged for 5 M. Lou. Title & Ky. Title Bonds)	
Vouchers No. 1-132	\$18,942.19

Balance September 1, 1927	\$ 7,609.30
Reconciliation:	
Balance in Second National Bank, Lexington,	

Kentucky, Treasurer's Account	\$10,116.87
Vouchers outstanding, viz:	
No. 84, June 6, 1921, A. P. Hunt....	1.00
No. 111, January 3, 1922, Dr. V. A. Stille	6.50
No. 115, June 30, 1927, Dr. A. T. McCormack	210.02
No. 116, June 30, 1927, Dr. L. H. South	100.00
No. 117, June 30, 1927, Elva Grant..	75.00
No. 118, June 30, 1927, W. R. Bonnell.	185.50
No. 119, June 30, 1927, Woman's Auxiliary, K. S. M. A.....	2.47
No. 120, June 30, 1927, F. C. Dugau.	12.30
No. 121, June 30, 1927, Heavrin, Heavrin & Heavrin.....	612.35
No. 122, June 30, 1927, Electric Blue Print & Supply Co.....	15.10
No. 123, June 30, 1927, Meffert Equipment Co.	8.00
No. 124, June 30 1927, Bush Krebs Co.	7.58
No. 125, June 30, 1927, Times-Journal Publishing Co.	8.48
No. 126, June 30, 1927, Times Journal Publishing Co.	613.27
No. 127, July 30, 1927, Dr. A. T. McCormack	150.00
No. 128, July 30, 1927, Dr. L. H. South	100.00
No. 129, July 30, 1927, Elva Grant..	75.00
No. 130, August 31, 1927, Dr. A. T. McCormack	150.00
No. 131, August 31 1927, Dr. L. H. South	100.00
No. 132, August 31, 1927, Elva Grant.	75.00
Total	2,507.57

Balance agreeing with Secretary.....	\$ 7,609.30
Vouchers No. 127, 128, 129, 130, 131, 132 are in the hands of the Secretary to be delivered.	

STATEMENT OF ASSETS

Balance in Second National Bank, Lexington, Ky. to the credit of W. B. McClure, Treasurer.....	\$10,116.87
Less Vouchers Outstanding.....	2,507.57
Net Cash Balance September 1, 1927.....	\$ 7,609.20
Louisville Title Bonds in hands of Treasurer	
Face Value	5,000.00
Office Furniture, etc. (See Exhibit "C")	660.69
Total	\$13 269.99

EXHIBIT "A"

RECEIPTS

Dues from County Societies	\$ 9,168.00
Income of Journal (Exclusive of Investments, etc.)	8,109.89
Total	\$17,277.89

Interest on Investments, viz:

Interest on Liberty Bond No. 1....	\$ 85.00
Interest on Liberty Bond No. 2....	42.50
Total	\$ 127.50

Total Receipts	\$17,405.39
Balance on hand September 1, 1926.	9,146.10
Total	\$26,551.49

DISBURSEMENTS

STATE MEDICAL ASSOCIATION:	
President's Sundries	\$ 6.50
Secretary's Salary	1,800.00
Secretary's Stenographer Salary....	900.00
Secretary's Stamps & Envelopes....	198.68
Secretary's Sundries	246.87
Treasurer's Bond	12.50
Treasurer's Sundries	20.00
Officers, Councilors & Committee Expenses	227.68
Purchase of Investments	1,989.44
Irvine Estate Expense	112.14
Practice Act, Medical Enforcement..	150.00
Attorney's Fees, Medico-Legal Committee	2,375.00
Cost & Expenses, Medico-Legal Committee	562.14
Association Sundries	1,075.74
Expenses of Frankfort Meeting	1,116.55
Expenses of Owensboro Meeting	27.40

Total State Medical Association.....	\$10,820.64
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KENTUCKY MEDICAL JOURNAL:	
Business Manager's Salary	\$1,200.00
Business Manager's Sundries	93.41
Journal Advertisement Collections	
Paid Woman's Auxiliary, Kentucky	
State Medical Association	1,019.28
Journal Printing	4,804.28
Journal	123.27
Journal Sundries	881.31

Total Journal	\$ 8,121.55
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Grand Total	\$18,942.19
Balance on hand this date.....	7,609.30

Total	\$26,551.49
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EXHIBIT "B"

Detailed list of receipts from County Societies from September 1926 to September 1927, compared with incomes of same period last year:

	1926	1927
Adair	\$ 30.00	\$ 45.00
Allen	55.00	50.00
Anderson	45.00	45.00
Ballard	50.00	40.00
Barren	80.00	70.00
Bath	35.00	40.00
Bell	115.00	160.00
Boone	5.00	25.00
Bourbon	60.00	45.00
Boyd	230.00	245.00
Boyle	55.00	55.00
Bracken	35.00	40.00
Breathitt	25.00	40.00
Breckinridge	70.00	65.00
Bullitt	36.00	40.00
Butler	15.00	15.00
Caldwell	40.00	45.00
Calloway	70.00	80.00
Campbell-Kenton	565.00	500.00
Carlisle	50.00	45.00
Carroll	30.00	40.00
Carter	65.00	45.00
Casey	20.00	20.00
Christian	170.00	175.00
Clark	105.00	105.00
Clay	45.00	45.00
Clinton	20.00	20.00
Crittenden	55.00	45.00
Cumberland	35.00	35.00
Daviess	230.00	225.00
Elliott	...	5.00
Estill	40.00	45.00
Fayette	510.00	465.00
Fleming	70.00	65.00
Floyd	50.00	35.00
Franklin	105.00	100.00
Fulton	60.00	50.00
Gallatin	15.00	10.00
Garrard	30.00	25.00
Grant	60.00	55.00
Graves	130.00	125.00
Grayson	55.00	55.00
Green	15.00	25.00
Greenup	35.00	40.00
Hancock	5.00	4.00
Hardin	95.00	100.00
Harlan	220.00	250.00
Harrison	75.00	75.00
Hart	40.00	50.00
Henderson	80.00	75.00
Henry	60.00	45.00
Hickman	55.00	45.00
Hopkins	130.00	120.00
Jackson	15.00	20.00
Jefferson	1,830.00	1,840.00
Jessamine	55.00	60.00
Johnson	50.00	50.00
Knott	2.00	10.00
Knox	65.00	60.00
Larue	45.00	40.00
Laurel	35.00	40.00
Lawrence	60.00	40.00
Lee	3.00	3.00
Leslie	5.00	10.00
Letcher	40.00	65.00
Lewis	20.00	25.00
Lincoln	70.00	75.00
Livingston	30.00	30.00
Logan	80.00	85.00
Lyon	25.00	25.00
McCracken	220.00	235.00
McCreary	35.00	35.00
McLean	25.00	30.00
Madison	125.00	135.00
Magoffin	20.00	5.00
Marion	56.00	50.00
Marshall	75.00	75.00
Martin	...	...
Mason	95.00	55.00
Meade	5.00	10.00
Menifee	...	...
Mercer	90.00	90.00
Monroe	15.00	15.00
Metcalfe	35.00	25.00
Montgomery	65.00	60.00
Morgan	10.00	10.00
Muhlenberg	70.00	85.00
Nelson	60.00	60.00
Nicholas	50.00	50.00
Ohio	35.00	45.00
Oldham	40.00	40.00
Owen	45.00	40.00
Owsley	15.00	15.00

Pendleton	50.00	35.00
Perry	175.00	125.00
Pike	95.00	90.00
Powell	25.00	15.00
Pulaski	45.00	65.00
Robertson	5.00	5.00
Rockcastle	25.00	15.00
Rowan	10.00	10.00
Russell	40.00	35.00
Scott	75.00	90.00
Shelby	75.00	70.00
Simpson	50.00	60.00
Spencer	5.00	10.00
Taylor	40.00	45.00
Todd	35.00	35.00
Trigg	11.00	10.00
Trimble	...	...
Union	45.00	50.00
Warren	110.00	175.00
Washington	50.00	45.00
Wayne	30.00	20.00
Webster	5.00	30.00
Whitley	120.00	130.00
Wolfe	...	5.00
Woodford	25.00	45.00
	\$9,138.00	\$9,163.00

EXHIBIT "C"

Invoice of the property of the Association, September 1, 1927:

Addressograph with 5,000 complete addressed plates with list device, etc.	\$600.00
1 Remington Typewriter	25.00
1 Desk	50.00
1 Typewriter Chair	9.00
1 Filing Cabinet	64.75
Rubber Stamps	9.00
Guide Cards	5.00
1-3 Adding Machine	75.00
1 Electric Fan	18.00
1 Globe Safe with Fixtures	130.00
Total	\$985.75
50% Reduction for Depreciation in Machinery	492.87
	\$492.88
6,000 No. 5 2-cent Stamped Envelopes \$21.92 per M.	131.52
1,000 No. 8 2-cent Stamped Envelopes \$22.88 Per M.	22.88
500 No. 9 2-cent Stamped Envelopes	13.41
	\$660.69

EXHIBIT "D"

Secretary's Monthly Balance Sheet, agreeing with books:

1926-27			
September 1. Balance on hand	September 1, 1926.	\$9,146.10	
1926-27	Expenses	Collections	Balance
October 1	\$2,075.46	\$1,486.62	\$8,557.26
November 1	1,828.13	1,216.70	7,945.83
December 1	1,460.32	746.53	7,232.04
January 1	934.59	303.35	6,600.80
February 1	1,559.50	4,142.61	9,183.91
March 1	4,179.06	2,098.03	7,102.88
April 1	1,661.41	2,517.66	7,959.13
May 1	1,349.85	2,790.67	9,399.95
June 1	1,393.80	1,303.73	9,309.88
July 1	1,850.07	799.49	8,259.30
August 1	325.00		7,934.30
September 1	325.00		7,609.30
	\$18,942.19	\$17,405.39	
Balance on hand Sept. 1, 1926.		9,146.10	\$26,551.49
Balance on hand Sept. 1 1927.		\$ 7,609.30	
Total Expenses		\$18,942.10	\$26,551.49

EXHIBIT "E"

Collections by Secretary on account of Kentucky State Medical Association, corresponding with checks, deposit slips and receipts, filed:

October 1—To Collections to Date	\$ 155.00
November 1—To Collections to Date	115.00
December 1—To Collections to Date	33.00
January 1—To Collections to Date	180.00
February 1—To Collections to Date	2765.00
March 1—To Collections to Date	1285.00
April 1—To Collections to Date	1470.00
May 1—To Collections to Date	2180.00
June 1—To Collections to Date	730.00
July 1—To Collections to Date	255.00
Total for Year	\$9168.00

EXHIBIT "F"

Collections by Editor on account of the Journal, corresponding with checks, deposit slips and receipts filed:

1926-27	
October 1—To Collections to Date.....	\$1331.62
November 1—To Collections to Date.....	1037.95
December 1—To Collections to Date.....	713.53
January 1—To Collections to Date.....	123.35
February 1—To Collections to Date.....	1377.61
March 1—To Collections to Date.....	813.03
April 1—To Collections to Date.....	983.91
May 1—To Collections to Date.....	610.67
June 1—To Collections to Date.....	573.73
July 1—To Collections to Date.....	544.49
Total for Year	\$8109.89
Interest on Liberty Bonds	127.50
Grand Total	\$8237.39

EXHIBIT "G"

Total membership by Councilor Districts and by Counties for 1927 as compared to that of 1926:

First District—V. A. Stilley, Benton, Councilor.		
	1926	1927
Ballard	9	8
Caldwell	8	9
Calloway	14	16
Carlisle	10	9
Crittenden	9	9
Fulton	10	10
Graves	26	25
Hickman	10	8
Livingston	6	5
Lyon	5	5
Marshall	15	15
McCracken	44	47
Trigg	2	2
	168	168

Second District—D. M. Griffith, Owensboro, Councilor.		
	1926	1927
Davies	43	44
Hancock	1	
Henderson	16	15
Hopkins	26	24
McLean	5	6
Muhlenberg	11	16
Ohio	7	9
Union	9	10
Webster	1	5
	119	129

Third District—J. H. Blackburn, Bowling Green, Councilor.		
	1926	1927
Allen	11	10
Barren	16	14
Butler	3	3
Christian	34	35
Cumberland	7	7
Logan	16	17
Metcalfe	7	5
Monroe	3	3
Simpson	10	12
Todd	7	7
Warren-Edmonson	22	31
	136	144

Fourth District—D. E. McClure, Elizabethtown, Councilor.		
	1926	1927
Breckinridge	14	13
Bullitt	7	8
Grayson	11	11
Hardin	19	20
Hart	8	10
Larue	9	8
Meade	1	2
Nelson	12	11
Spencer	1	1
	82	84

Fifth District—W. E. Gardner, Louisville, Councilor.		
	1926	1927
Carroll	6	8
Franklin	21	19
Gallatin	3	2
Henry	9	8
Jefferson	358	359
Oldham	8	8
Owen	6	7
Shelby	15	13
Trimble .....	..	..
	426	424

Sixth District—R. C. McChord, Lebanon, Councilor.		
	1926	1927
Adair	6	9
Anderson	9	9
Boyle	11	11
Green	3	5
Marion	11	10
Mercer	17	18
Taylor	9	9
Washington	10	9
	76	80

Seventh District—V. G. Kinnaird, Lancaster, Councilor.		
	1926	1927
Casey	4	4
Clinton	4	4
Garrard	6	5
Jessamine	11	12
Lincoln	14	15
McCreary	7	7
Pulaski	9	13
Rockcastle	4	3
Russell	8	7
Wayne	5	4
	72	74

Eighth District—C. W. Shaw, Alexandria, Councilor.		
	1926	1927
Boone	1	4
Bourbon	12	9
Bracken	7	8
Campbell-Kenton	90	98
Fleming	14	13
Grant	12	11
Harrison	15	15
Mason	19	11
Nicholas	10	10
Pendleton	9	7
Robertson	1	1
Scott	15	16
	205	203

Ninth District—W. L. Gambill, Ashland, Councilor.		
	1926	1927
Boyd	46	48
Carter	11	9
Elliott .....	..	..
Floyd	7	6
Greenup	7	8
Johnson	8	10
Lawrence	9	8
Lewis	4	5
Magoffin	2	1
Martin .....	..	..
Pike	17	18
	111	113

Tenth District—S. B. Marks, Lexington, Councilor.		
	1926	1927
Bath	7	8
Breathitt	5	8
Clark	20	21
Estill	8	9
Fayette	83	86
Lee .....	..	..
Madison	25	26
Menifee .....	..	..
Montgomery	13	12
Morgan	2	2
Powell	5	3
Rowan	2	2
Wolfe .....	..	1
Woodford	4	9
	174	187

Eleventh District—W. M. Martin, Harlan, Councilor.		
	1926	1927
Bell	22	29
Clay	9	9
Harlan	41	44
Jackson	3	4
Knott .....	..	..
Knox	12	11
Laurel	7	8
Leslie	1	2
Letcher	7	13
Owsley	3	8
Perry	31	25
Whitley	24	26
	160	174

EXHIBIT "H"

Detailed Statement of Disbursements of W. B. McClure, Treasurer, Kentucky State Medical Association, each made on a Voucher Check signed by Dr. Irvin Abell, President, Dr. A. T. McCormack, Secretary, and himself, from September 1, 1926 to September 1, 1927.

1926				
September	1—Voucher Check No. 1.....	\$	381.17	
	TIMES-JOURNAL PUBLISHING CO., Bowling Green.			
	To August Issue—2,150 80.....	\$357.60		
	To 2500 envelopes.....	15.00		
	To printing envelopes.....	2.30		
	To 25 changes.....	5.00		
	To express on Pictures.....	1.27		
		\$381.17		
September	1—Voucher Check No. 2.....	\$	58.25	
	TIMES-JOURNAL PUBLISHING CO., Bowling Green.			
	To 250 Letter Heads & 250 Envelopes, Coun. 7th Dist.....	\$ 4.25		
	To 500 Letter Heads & 500 Envelopes, Chr. of Coun.....	6.50		
	To 500 Letter Heads & 500 Envelopes, Coun. 8th Dist.....	6.50		
	To 4000 Letter Heads, Brown Building.....	18.00		
	To 500 Letter Heads & Envelopes, Eye, Ear, Etc.....	6.50		
	To 500 Letter Heads & 500 Envelopes, Coun. 3rd Dist.....	6.50		
	To 200 Applications for Space & 200 Commercial Exhibits.....	10.00		
		\$58.25		
September	30—Voucher Check No. 3.....	\$	193.90	
	DR. A. T. McCORMACK, Secretary, Louisville.			
	To September salary.....	\$150.00		
	To reimbursement for cash expended for expenses at Frankfort meeting.....	43.90		
	Approved by Council and Ordered Paid by House of Delegates.			
September	30—Voucher Check No. 4.....	\$	131.00	
	DR. L. H. SOUTH, Business Manager, Louisville.			
	To September salary.....	\$100.00		
	To expenses as follows:			
	Aug. 22—Bus, Frankfort and return.....	\$ 3.50		
	Hotel.....	4.50		
	Aug. 25—Bus to Elizabethtown and return.....	3.00		
	Hotel.....	1.50		
	Aug. 27—R. R. fare to Crab Orchard & return.....	8.00		
	Hotel.....	10.00		
	Bus.....	.50	31.00	
	Approved by Council and Ordered Paid by House of Delegates.			
September	30—Voucher Check No. 5.....	\$	78.50	
	ELVA GRANT, Louisville.			
	To September salary.....	\$75.00		
	To expenses at Frankfort meeting.....	3.50		
	Approved by Council and Ordered Paid by House of Delegates.			
September	30—Voucher Check No. 6.....	\$	60.11	
	MAYME SULLIVAN, Louisville.			
	To Honorarium.....	\$25.00		
	To expenses at Frankfort meeting.....	35.11		
	Approved by Council and Ordered Paid by House of Delegates.			
September	30—Voucher Check No. 7.....	\$	25.00	
	MARY ATKINS, Louisville.			
	To Honorarium.....			
	Approved by Council and Ordered Paid by House of Delegates.			
September	30—Voucher Check No. 8.....	\$	5.00	
	THOS. L. HIGGENBOTHAM, Louisville.			
	To return fee for State Membership 1926.....			
	Approved by Council and Ordered Paid by House of Delegates.			
September	30—Voucher Check No. 9.....	\$	61.80	
	B. P. EUBANK, Auditor, Bowling Green.			
	To auditing books and accounts of Treasurer Dr. W. B. McClure, and Secretary, Dr. A. T. McCormack.....	\$50.00		
	To R. R. fare, Bowling Green & return & meals.....	11.80		
	Approved by Council and Ordered Paid by House of Delegates.			
September	30—Voucher Check No. 10.....	\$	25.00	
	HAUPT FLORIST, Louisville.			
	To design for Dr E. S. Smith.....			
	Approved by Council and Ordered Paid by House of Delegates.			
September	30—Voucher Check No. 11.....	\$	65.40	
	DR. GEO. C. LEACHMAN, Louisville.			
	To reimbursement for bills paid to County Clerk in case of Jos. Warring—Court Costs.			
	Approved by Council and Ordered Paid by House of Delegates.			
September	30—Voucher Check No. 12.....	\$	250.00	
	HEAVRIN, HEAVRIN & HEAVRIN, Hartford.			
	To Attorneys fees in case of J. P. Embr vs. Dr. J. O. McKenney.			
	Approved by Council and Ordered Paid by House of Delegates.			
September	30—Voucher Check No. 13.....	\$	144.99	
	DR. J. O. McKENNEY, Hartford.			
	To expense in defending case of J. P. Embr vs. Dr. J. O. McKenney.			
	Approved by Council and Ordered Paid by House of Delegates.			
September	30—Voucher Check No. 14.....	\$	3.53	
	TINSLEY-CLINGMAN CO., Louisville.			
	To 1 cut.....			
	Approved by Council and Ordered Paid by House of Delegates.			
September	30—Voucher Check No. 15.....	\$	2.66	
	BUSH-KREBS CO., Louisville.			
	To 1 cut.....			
	Approved by Council and Ordered Paid by House of Delegates.			
September	30—Voucher Check No. 16.....	\$	8.15	
	MEFFERT EQUIPMENT CO., Louisville.			
	To 2 black board erasers.....	\$.90		
	To 1 set of guides, A-Z.....	.90		
	To 2 M. plain white cards.....	6.30		
		\$8.15		

Approved by Council and Ordered Paid by House of Delegates.		
September 30—Voucher Check No. 17.....	\$	189.65
S. W. BASSETT CO., Providence, R. I.		
To 300 Gold buttons, Ky. State Med. Ass'n at 37c.....	\$111.00	
To 300 Bangles—gold plate—Frankfort 1926 at 26c.....	78.00	
Postage .....	.65	
	<u>\$189.65</u>	
Approved by Council and Ordered Paid by House of Delegates.		
September 30—Voucher Check No. 18.....	\$	3.50
KOEHLER STAMP & STENCIL CO., Louisville.		
To 1 signature stamp and cut.		
Approved by Council and Ordered Paid by House of Delegates.		
September 30—Voucher Check No. 19.....	\$	7.50
L. GRAUMAN & CO., Louisville.		
To 1 Medical Trunk.		
Approved by Council and Ordered Paid by House of Delegates.		
September 30—Voucher Check No. 20.....	\$	197.40
MOORMAN & WALLS, Hardinsburg.		
To attorney fees and expense in case of Harve Hatfield vs. Dr. T. M. Nimmo.		
To attorney fees	\$150.00	
To expense	47.40	
	<u>\$197.40</u>	
Approved by Council and Ordered Paid by House of Delegates.		
September 30—Voucher Check No. 21.....	\$	5.00
HARLAN COUNTY MEDICAL SOCIETY, Harlan.		
To return of membership fee for Dr. W. E. McWilliams, Twila.		
Approved by Council and Ordered Paid by House of Delegates.		
September 30—Voucher Check No. 22.....	\$	20.00
WM. J. RUEFF, Louisville.		
To 2 Canvas Banners Coated and Lettered.		
Approved by Council and Ordered Paid by House of Delegates.		
September 30—Voucher Check No. 23.....	\$	50.00
TREASURER, CHRISTIAN CHURCH, Frankfort.		
To use of Church for State meeting.		
Approved by Council and Ordered Paid by House of Delegates.		
September 30—Voucher Check No. 24.....	\$	15.00
C. E. BOOE, Frankfort.		
To 3 nights as night watchman @ \$5.00 each.		
Approved by Council and Ordered Paid by House of Delegates.		
September 30—Voucher Check No. 25.....	\$	5.00
MILDRED JOHNSTON, Frankfort.		
To services at State meeting.		
Approved by Council and Ordered Paid by House of Delegates.		
September 30—Voucher Check No. 26.....	\$	20.00
DR. W. B. McCLURE, Treasurer, Lexington.		
To expenses to Frankfort meeting	\$17.00	
To stamps for Treasurer's office.....	3.00	
	<u>\$20.00</u>	
Approved by Council and Ordered Paid by House of Delegates.		
September 30—Voucher Check No. 27.....	\$	7.25
SOUTHERN HOTEL CO., Frankfort.		
To 1 room, 3 nights.....	\$6.00	
To 2 meals	1.25	
	<u>\$7.25</u>	
Approved by Council and Ordered Paid by House of Delegates.		
September 30—Voucher Check No. 28.....	\$	6.80
OTHO HASKINS, Louisville.		
To expenses at Frankfort as follows:		
To room, 3 nights	\$3.00	
To meals, 3 days	3.80	
	<u>\$6.80</u>	
Approved by Council and Ordered Paid by House of Delegates.		
September 30—Voucher Check No. 29.....	\$	83.90
CAPITAL HOTEL, Frankfort.		
To 2 rooms and meals, 4 days.		
Approved by Council and Ordered Paid by House of Delegates.		
October 12—Voucher Check No. 30.....	\$	673.21
TIMES-JOURNAL PUBLISHING CO., Bowling Green.		
To Annual Sept. Issue—104 P.—2,500.....	\$571.04	
To inserting Dr. Abell's Picture	5.00	
To setting 59 747-6 pt. type	88.62	
To 2,500 envelopes	15.00	
To printing envelopes	2.30	
To 30 changes	6.00	
By 43 typ. errors @ 25c each.....	\$ 5.00	
Less inserting Dr. Abell's picture.....	\$10.75	\$ 15.75
	<u>\$688.96</u>	
October 30—Voucher Check No. 31.....	\$	150.00
DR. A. T. McCORMACK, Secretary, Louisville.		
To October salary.		
October 30—Voucher Check No. 32.....	\$	132.50
DR. L. H. SOUTH, Business Manager, Louisville.		
To October salary.....	\$100.00	
To Expenses to Frankfort:		
Bus fare	\$ 3.50	
Hotel	28.50	
Baggage .....	.50	32.50
	<u>\$132.50</u>	
Approved by Council and Ordered Paid by House of Delegates.		
October 30—Voucher Check No. 33.....	\$	75.00
ELVA GRANT, Bookkeeper, Louisville.		
To October salary.		
October 30—Voucher Check No. 34.....	\$	26.20
DR. J. H. BLACKBURN, Bowling Green.		
To expense as Councilor of 3rd District.		
Approved by Council and Ordered Paid by House of Delegates.		

October 30—Voucher Check No. 35.....	\$ 19.72
DR. D. M. GRIFFITH Owensboro.	
To expense as Councilor of 2nd District.	
Approved by Council and Ordered Paid by House of Delegates.	
October 30—Voucher Check No. 36.....	\$ 13.50
WM. R. DERING, Louisville.	
To 25% commission on advertisements amounting to \$54.00.	
October 30—Voucher Check No. 37.....	\$ 75.00
FRED FORCHT, Attorney, Louisville.	
To attorney fee in case of Marie Larson vs. Dr. Wallace Frank.	
October 30—Voucher Check No. 38.....	\$ 5.50
DR. R. C. McCHORD, Lebanon.	
To expense as Councilor of 6th District.	
Approved by Council and Ordered Paid by House of Delegates.	
October 30—Voucher Check No. 39.....	\$ 250.00
GORGAS MEMORIAL INSTITUTE, Chicago, Ill.	
To contribution for Permanent Trust Fund.	
Approved by Council and Ordered Paid by House of Delegate in 1925.	
October 30—Voucher Check No. 40.....	\$ 40.75
MRS. C. C. SOUTHGATE, Fort Thomas.	
To 25% commission on \$163.00—exhibit space for Frankfort meeting.	
October 30—Voucher Check No. 41.....	\$ 54.00
COURIER-JOURNAL JOB PRINTING CO., Louisville.	
To 4000 membership cards (2000-1927 & 2000-1928).	
October 30—Voucher Check No. 42.....	\$ 57.50
DR. CHARLES C. MAPES, Louisville.	
To reporting Minutes of Eye, Ear, Nose and Throat Section at 1926 State Meeting.	
October 30—Voucher Check No. 43.....	\$ 12.50
HINES & STOVALL, Bowling Green.	
To bond for Dr. W. M. McClure, Treas., Ky. State Med. Ass'n.	
October 30—Voucher Check No. 44.....	\$ 192.75
TIMES-JOURNAL PUBLISHING CO., Bowling Green.	
To Oct. Issue—72 P.—2150.....	\$330.00
To 20 changes.....	4.00
To 2500 envelopes.....	15.00
To printing envelopes.....	2.00
	<u>\$351.00</u>
Less 15 days delay.....	\$150.00
By 33 errors @ 25c.....	8.25
	<u>158.25</u>
October 30—Voucher Check No. 45.....	\$ 50.00
C. NEIGHBORS, P. M., Bowling Green.	
To stamps for Journals.	
November 30—Voucher Check No. 46.....	\$ 150.00
DR. A. T. McCORMACK, Secretary, Louisville.	
To November salary.	
November 30—Voucher Check No. 47.....	\$ 110.00
DR. L. H. SOUTH, Business Manager, Louisville.	
To November salary.....	\$100.00
To expense to Bowling Green & return.....	10.00
	<u>75.00</u>
November 30—Voucher Check No. 48.....	\$ 75.00
ELVA GRANT, Bookkeeper, Louisville.	
To November salary.	
November 30—Voucher Check No. 49.....	\$ 140.50
RUTH CONNAWAY, Henderson.	
To reporting & transcribing evidence in case of Galloway vs. Dr. E. N. Powell.	
November 30—Voucher Check No. 50.....	\$ 500.00
HOUGHTON MIFFLIN CO., Boston.	
To 2 M. Thomas T. Goldthwait's Body Mechanics & Health.	
November 30—Voucher Check No. 51.....	\$ 3.50
KOEHLER STAMP & STENCIL CO., Louisville.	
To 1 signature stamp.	
November 30—Voucher Check No. 52.....	\$ 4.26
BUSH KREBS CO., Louisville.	
To 1 cut.	
November 30—Voucher Check No. 53.....	\$ 1.25
MAYME SULLIVAN, Louisville.	
To 25 boxes drinking cups used at State Meeting.	
November 30—Voucher Check No. 54.....	\$ 21.22
TIMES-JOURNAL PUBLISHING CO., Bowling Green.	
To postage to Frankfort.....	.72
To 500 order blanks.....	6.00
To 1 M. index cards.....	8.50
To 250 contract blanks.....	6.00
	<u>\$21.22</u>
November 30—Voucher Check No. 55.....	\$ 446.17
TIMES-JOURNAL PUBLISHING CO., Bowling Green.	
To November issue, 2150-96 pg.....	\$510.62
To 30 changes.....	6.00
To envelopes.....	15.00
To printing envelopes.....	2.30
	<u>\$533.92</u>
Less 8 days' delay @ \$10.00 per day.....	\$80.00
Less 31 errors @ 25c each.....	7.75
	<u>\$ 87.75</u>
November 30—Voucher Check No. 56.....	\$ 6.07
COURIER-JOURNAL JOB PRINTING CO., Louisville.	
To 450 membership cards for 1927 and 1928.	
November 30—Voucher Check No. 57.....	\$ 2.35
THE ART SHOP, Louisville.	
To 1 frame.	
December 22—Voucher Check No. 58.....	\$ 150.00
DR. A. T. McCORMACK, Secretary, Louisville.	
To December salary.	
December 22—Voucher Check No. 59.....	\$ 119.91
DR. L. H. SOUTH, Business Manager, Louisville.	

To December salary		\$100.00	
To expense to Corbin & return on Dec. 9th.....		19.91	
December 22—Voucher Check No. 60.....			\$ 75.00
ELVA GRANT, Bookkeeper, Louisville.			
To December salary.....			
December 22—Voucher Check No. 61.....			\$ 19.00
DR. W. E. GARDNER, Louisville.			
To expense as Councilor, Fifth District.....			
December 22—Voucher Check No. 62.....			\$ 8.50
AMERICAN MEDICAL ASSOCIATION, Chicago, Ill.			
To 100 copies, "Periodic Examination".			
December 22—Voucher Check No. 63.....			\$ 350.00
W. A. BERRY, Attorney, Paducah.			
To attorney fees in case of Mrs. Geo. Cash vs. Dr. V. Powell & Dr. W. T. Dowdell.			
December 22—Voucher Check No. 64.....			\$ 13.50
WM. R. DERING, Louisville.			
To 25% commission on advertisements amounting to \$54.00.			
December 22—Voucher Check No. 65.....			\$ 198.68
LUDLOW PETTY, P. M.			
To 8 M. No. 5 Envelopes @ \$21.92.....		\$175.36	
To 1 M. No. 9 Envelopes @ \$23.32.....		23.32	
1927			
January 31—Voucher Check No. 66.....			\$ 150.00
DR. A. T. McCORMACK, Secretary, Louisville.			
To January salary.....			
January 31—Voucher Check No. 67.....			\$ 100.00
DR. L. H. SOUTH, Business Manager, Louisville.			
To January salary.....			
January 31—Voucher Check No. 68.....			\$ 75.00
ELVA GRANT, Bookkeeper, Louisville.			
To January salary.....			
January 31—Voucher Check No. 69.....			\$ 150.00
FRED FORCHT, Attorney, Louisville.			
To legal services through December 31, 1926.			
January 31—Voucher Check No. 70.....			\$ 112.14
J. J. GREENLEAF, Attorney, Richmond.			
To expenses to Kansas City, Jan. 2-9.			
January 31—Voucher Check No. 71.....			\$ 279.23
WOMAN'S AUXILIARY Kentucky State Medical Association.			
To collections to date.....			
January 31—Voucher Check No. 72.....			\$ 693.13
TIMES-JOURNAL PUBLISHING CO., Bowling Green.			
To 2600 December issue, 124 P.		\$730.50	
To setting 18725 ems of 6 pt.		28.08	
To 2500 envelopes		15.00	
To printing envelopes		2.30	
To 40 changes		8.00	
To re-making up forms for poem		25.00	
		\$808.88	
Less 63 errors @ 25c each.....		\$ 15.75	
Less 10 days' delay @ \$10.00 a day		100.00	\$115.75
February 1—Voucher Check No. 73.....			\$ 1989.44
J. J. B. HILLIARD & SONS, Louisville.			
To 4 1-M. Louisville Title (1-12-1-1936)			
Co. Bonds (1-12-23-1936)		\$4000.00	
(1-12-16-1935)			
(1-1-3-1937)			
To 1 M. Ky. Title Co. Bond (12-28-1936)		1000.00	
Accumulative Interest 6%		34.00	
		5034.17	
By Credit 3 M. Liberty Bonds 2nd 4 1-4's.....		\$3017.81	
Interest 76 days		26.92	3044.73
		\$1989.44	
February 28—Voucher Check No. 74.....			\$ 197.30
DR. A. T. McCORMACK, Secretary, Louisville.			
To February salary.....		\$150.00	
To expense to Chicago & return, Feb. 16.....		47.80	
February 28—Voucher Check No. 75.....			\$ 100.00
DR. L. H. SOUTH, Business Manager, Louisville.			
To February salary.....			
February 28—Voucher Check No. 76.....			\$ 75.00
ELVA GRANT, Bookkeeper, Louisville.			
To February salary.....			
February 28—Voucher Check No. 77.....			\$ 2.87
MAYME SULLIVAN, Louisville.			
To reimbursement for express paid on Liberty Bonds.			
February 28—Voucher Check No. 78.....			\$ 1.75
KENTUCKY BOOK MFG. CO., Louisville.			
To binding 1926 Kentucky Medical Journals.			
February 28—Voucher Check No. 79.....			\$ 540.84
MASTER REPORTING CO., New York, N. Y.			
To reporting Annual Convention of the 1926 Kentucky State Medical Association Meeting:			
1157½ folios original transcript @ 30c		\$347.25	
1212½ folios carbon copies @ 4c		48.50	
Abridged Reports: 7 sessions @ \$10.00 each		70.00	
		465.75	
Postage		6.74	
Traveling Expense		68.35	
		\$540.84	
February 28—Voucher Check No. 80.....			\$ 209.85
WOMAN'S AUXILIARY, Kentucky State Medical Association.			

To collections to date.	
February 28—Voucher Check No. 81	\$ 150.00
CHESTER A. BACH, Attorney, Jackson.	
To fee in case: Felix Pence vs. Wilgus Bach.	
February 28—Voucher Check No. 82	\$ 50.00
CLARENCE NEIGHBORS, Postmaster, Bowling Green.	
To postage on Journals.	
February 28—Voucher Check No. 83	\$ 90.75
TIMES-JOURNAL PUBLISHING CO., Bowling Green.	
To 500 letter heads & 500 envelopes, Pres elect	\$ 6.50
To 1000 letter heads & 1000 envelopes, C. of 3rd Dist.	12.00
To 500 letter heads & 500 envelopes, C. of Council	6.50
To 250 letter heads & 250 envelopes, C. of 4th Dist.	4.25
To 10,000 letter heads office of Secretary	40.00
To 250 letter heads & 250 envelopes, C. of 1st Dist.	4.25
To 500 letter heads & 500 envelopes, office of Pres.	6.50
To 500 letter heads & 500 envelopes, C. of 10th Dist.	6.50
To 250 letter heads & 250 envelopes, C. of 9th Dist.	4.25
	<u>\$90.75</u>
February 28—Voucher Check No. 84	\$ 713.50
TIMES-JOURNAL PUBLISHING CO., Bowling Green.	
To Jan. issue, 2200-60 P.	\$314.50
To 30 changes	6.00
To 2500 envs.	15.00
To printing envs.	2.30
	<u>\$337.80</u>
Less 6 days delay @ \$10.00 a day	60.00
Less 240 errors @ 25c each	60.00
	<u>120.00</u>
	\$217.80
To Feb. issue, 2200-88 P.	\$472.40
To 30 changes	6.00
To envs.	15.00
To printing envs.	2.30
	<u>495.70</u>
	<u>\$713.50</u>
February 28—Voucher Check No. 85	\$ 58.26
DR. O. V. BROWN, Island.	
To expenses to American Congress on Medical Education at Chicago.	
March 31—Voucher Check No. 86	\$ 155.65
DR. A. T. McCORMACK, Secretary, Louisville.	
To March salary	\$150.00
To expense to Paducah	5.65
March 31—Voucher Check No. 87	\$ 100.00
DR. L. H. SOUTH, Business Manager, Louisville.	
To March salary.	
March 31—Voucher Check No. 88	\$ 75.00
ELVA GRANT, Bookkeeper, Louisville.	
To March salary.	
March 31—Voucher Check No. 89	\$ 250.00
WM. WADDLE, Attorney, Somerset.	
To attorney fees in case: Rommie Calhoun vs. Dr. T. J. Acton.	
MARCH 31—Voucher Check No. 90	\$ 2.00
CLARENCE E. WALKER, Louisville.	
To copy of deposition of Dr. Dulaney in case of Carl Starr.	
March 31—Voucher Check No. 91	\$ 63.50
RUTH CONNAWAY, Henderson.	
To evidence taken in case: Radolph Galloway vs. Dr. E. N. Powell.	
March 31—Voucher Check No. 92	\$ 15.00
LETTER GRAPHIC SHOP, Louisville.	
To 625 copies, legal size statements, multigraphed.	
March 31—Voucher Check No. 93	\$ 32.42
BUSH KREBS CO., Louisville.	
To 8 cuts.	
March 31—Voucher Check No. 94	\$ 27.00
FRANKLIN W. PEARSE, Louisville.	
To 36 slides.	
March 31—Voucher Check No. 95	\$ 37.50
ALEC B. COOPER, Louisville.	
To 25% commission on advertisements amounting to \$150.00	
March 31—Voucher Check No. 96	\$ 493.25
TIMES-JOURNAL PUBLISHING CO., Bowling Green.	
To 2225-83 P. March Journal	\$477.20
To 35 changes	7.00
To envelopes	15.00
To printing envelopes	2.30
	<u>\$501.50</u>
By 33 errors @ 25c	8.25
	<u>\$410.09</u>
March 31—Voucher Check No. 97	\$ 410.09
WOMAN'S AUXILIARY, Kentucky State Medical Association.	
To collections to date.	
April 30—Voucher Check No. 98	\$ 150.00
DR. A. T. McCORMACK, Secretary, Louisville.	
To April salary.	
April 30—Voucher Check No. 99	\$ 100.00
DR. L. H. SOUTH, Business Manager, Louisville.	
To April salary.	
April 30—Voucher Check No. 100	\$ 75.00
ELVA GRANT, Bookkeeper Louisville.	
To April salary.	
April 30—Voucher Check No. 101	\$ 366.00
JOHN E. SHEPARD, Covington.	
To attorney fee in case: Baldwin vs. Averdick	\$350.00
To Court Costs	16.00
	<u>\$99.00</u>
April 30—Voucher Check No. 102	\$ 99.00
W. R. BONNELL, Louisville.	
To 25% commission on ads amounting to \$396.00.	
April 30—Voucher Check No. 103	\$ 4.41

BUSH KREBS CO., Louisville.	
To 1 cut.	
April 30—Voucher Check No. 104	\$ 50.94
WOMAN'S AUXILIARY, Ky. State Medical Association.	
To collections to date.	
April 30—Voucher Check No. 105	\$ 62.50
TIMES-JOURNAL PUBLISHING CO., Bowling Green.	
To 2500 reprints, Dr. Jenkins' Article	
April 30—Voucher Check No. 106	\$ 412.00
TIMES-JOURNAL PUBLISHING CO., Bowling Green.	
To April issue, 2225-88 P.	
To 40 changes	
To envelopes	
To printing envelopes	
Less by 5 days' delay @ \$10.00 each	
Less by 42 errors @ 25c each	
May 31—Voucher Check No. 107	\$ 100.00
DR. A. T. McCORMACK, Secretary, Louisville.	
To May salary	
To part expense to A. M. A. Meeting at Washington	
May 31—Voucher Check No. 108	\$ 100.00
DR. L. H. SOUTH, Business Manager, Louisville.	
To May salary.	
May 31—Voucher Check No. 109	\$ 75.00
ELVA GRANT, Bookkeeper, Louisville.	
To May salary.	
May 31—Voucher Check No. 110	\$ 51.75
W. R. BONNELL, Louisville.	
To 25% commission on ads amounting to \$207.00	
May 31—Voucher Check No. 111	\$ 66.70
WOMAN'S AUXILIARY, Kentucky State Medical Association.	
To collections to date.	
May 31—Voucher Check No. 112	\$ 577.80
TIMES-JOURNAL PUBLISHING CO., Bowling Green.	
To 2200 May Issue-108 P.	
To 35 changes	
To envelopes	
To printing envelopes	
To setting up & killing articles of Stuart Graves	
Less 149 Journals short @ 30c each	
May 31—Voucher Check No. 113	\$ 300.00
FRED FORCHT, Attorney, Louisville.	
To attorney fee in case of Daisy E. Hignite, Admr., Louisville Neurophatic Sanitarium, Dr.	
W. E. Render, Dr. W. E. Gardner and Dr. A. C. Kolb.	
May 31—Voucher Check No. 114	\$ 22.55
LUDLOW PETTY, P. M., Louisville.	
To postage on Journals.	
June 30—Voucher Check No. 115	\$ 210.02
DR. A. T. McCORMACK, Secretary, Louisville.	
To June salary	
To expense to A. M. A. Meeting & return, 40% of total expense	
June 30—Voucher Check No. 116	\$ 100.00
DR. L. H. SOUTH, Business Manager, Louisville.	
To June salary.	
June 30—Voucher Check No. 117	\$ 75.00
ELVA GRANT, Bookkeeper, Louisville.	
To June salary.	
June 30—Voucher Check No. 118	\$ 185.50
W. R. BONNELL, Louisville.	
To 25% Commission on ads amounting to \$747.00.	
June 30—Voucher Check No. 119	\$ 2.47
WOMAN'S AUXILIARY, Kentucky State Medical Association.	
To collections to date.	
June 30—Voucher Check No. 120	\$ 12.30
F. C. DUGAN, Louisville.	
To expense to Owensboro pertaining to State Meeting.	
June 30—Voucher Check No. 121	\$ 612.35
HEAVRIN, HEAVRIN & HEAVRIN, Attorneys, Hartford.	
To attorney's fees in cs. L. C. Daugherty, Admr. vs. Dr. I. L. Denton	
To court costs in cs. L. C. Daugherty, Admr. vs. Dr. I. L. Denton	
June 30—Voucher Check No. 122	\$ 15.10
ELECTRIC BLUE PRINT & SUPPLY CO., Louisville.	
To 250 blue line prints of floor space.	
June 30—Voucher Check No. 123	\$ 8.00
MEFFERT EQUIPMENT CO., Louisville.	
To 2 M. 3 ply plain cards	
To 500 3 ply plain cards punctured	
June 30—Voucher Check No. 124	\$ 7.58
BUSH-KREBS CO., Louisville.	
To 2 cuts.	
June 30—Voucher Check No. 125	\$ 8.48
TIMES-JOURNAL PUBLISHING CO., Bowling Green.	
To 500 letterheads & 500 envelopes, Eye Ear Nose & Throat Section	
To mailing Journals to Louisville	
June 30—Voucher Check No. 126	\$ 613.27
TIMES-JOURNAL PUBLISHING CO., Bowling Green.	
To 2200-116 Page June Journal	
To 30 changes	
To envelopes	
To printing envelopes	

		\$637.52	
	Less by 97 errors @ 25c each	24.25	
July 31—	Voucher Check No. 127		\$ 150.00
	DR. A. T. McCORMACK, Secretary, Louisville.		
	To July salary.		
July 31—	Voucher Check No. 128		\$ 100.00
	DR. L. H. SOUTH, Business Manager, Louisville.		
	To July salary.		
July 31—	Voucher Check No. 129		\$ 75.00
	ELVA GRANT, Bookkeeper, Louisville.		
	To July salary.		
August 31—	Voucher Check No. 130		\$ 150.00
	DR. A. T. McCORMACK, Secretary, Louisville.		
	To August salary.		
August 31—	Voucher Check No. 131		\$ 100.00
	DR. L. H. SOUTH, Business Manager, Louisville.		
	To August salary.		
August 31—	Voucher Check No. 132		\$ 75.00
	ELVA GRANT, Bookkeeper, Louisville.		
	To August salary.		
TOTAL			\$18,942.19

EXHIBIT "I"

WOMAN'S AUXILIARY, KENTUCKY STATE MEDICAL ASSOCIATION

RECEIPTS

Gross Dues Received		\$ 137.25	
Less Reimbursement for County Dues		\$ 17.25	
American Medical Association Dues	\$55.25		
American Medical Association Credit (Marshall County)	.50 55.75	73.00	
Net State Dues Received			\$ 64.25
Gross Receipts from Advertisements, Kentucky Medical Journal (Woman's Auxiliary No.)		\$1019.28	
Journal Sundries		\$ 64.53	
Commission Paid Counties on Advertisements	223.78	288.31	
Net Advertisement Receipts			730.97
Hygeia, American Medical Association, Commission on Subscriptions			17.50
Sundry Receipts			38.48
Total Net Receipts			\$ 851.20

DISBURSEMENTS

Southern Medical Association Dues		\$ 10.00	
Traveling Expense		110.01	
Office Services		9.50	
Stamps and Envelopes		195.58	
Office Supplies		27.73	
State Tax		.48	
Auxiliary Sundries		29.00	
Total Disbursements			382.30
Net Balance			\$ 468.90
Amount Due A. M. A. (Marshall Co. Credit).			.50
			\$ 469.40
Bank Balance, National Bank of Kentucky			469.40

Balance in National Bank of Kentucky, Louisville, Treasurer Account		\$ 493.15	
Less Outstanding Vouchers:			
1927			
Check No. 32 June 28, Mrs. P. E. Blackerby, Treas.		\$1.50	
Check No. 35, July 7, Mrs. Ernest Sullivan, Treas.		3.00	
Check No. 36, July 11, Mrs. Irvin Abell, Treas.		.50	
Check No. 37, July 11, C. T. Deering Printing Co.		18.25	
Check No. 38, July 11, Mrs. Horace Rivers, Treas.		.50	
Total Check Outstanding		23.75	
Balance agreeing with Treasurer's Report			\$ 469.40
MEMBERSHIP 1927			
Christian County	9	Marshall County	(Credit 2) 9
Daviess County	23	McCracken County	14
Franklin County	10	Oldham County	5
Graves County	16	Whitley County	17
Harlan County	16	State at Large	17
Jefferson County	85	Total Membership	221

EXHIBIT "J"

Detailed Statement of Receipts and Disbursements of Mrs. A. T. McCormack, Treasurer, Woman's Auxiliary, Kentucky State Medical Association from September 1, 1926 to September 1, 1927.			
1926			
Sept. 22—	Cash received from Dr. Veech, Sec. and Treas., 1926	\$ 4.83	Disburse- menta
Sept. 22—	Cash for stamps		\$ 4.83
Sept. 22—	Dues received at State Meeting	22.00	
	Jefferson County	\$10.00	
	Franklin County	1.00	
	Harlan County	1.00	
	Christian County	1.00	
	Oldham County	1.00	
	McCracken County	1.00	
	State at Large	7.00	
Sept. 22—	Cash for flowers sent Mrs. Fields, wife of Governor		4.00
Oct. 27—	Cash returned to County Treasurers		6.50
	Christian County	.50	
	Franklin County	.50	
	Harlan County	.50	
	Jefferson County	5.00	
Oct. 27—	Cash for dues paid Treasurer A. M. A. Auxiliary		5.50
	Christian County	.25	

Franklin County	.25	
Harlan County	.25	
Jefferson County	2.50	
State at Large	1.75	
McCracken County	.25	
Oldham County	.25	
Oct. 29—Dues, Harlan County	6.00	
Nov. 4—Dues, Franklin County	4.00	
Nov. 6—Dues, Graves County	3.50	
Dec. 7—Dues, Christian County	11.25	
Dec. 11—Dues, Jefferson County	23.50	
Dec. 14—Dues, Whitley County	3.00	
1927		
Jan. 20—Dues, Harlan County	1.50	
Jan. 20—Dues, Whitley County	1.50	
Jan. 24—Check No. 1, Mrs. F. Manning Brown	7.25	
To return of Christian County dues sent through error.		
Jan. 24—Check No. 2, Mrs. D. J. Williams	90.00	
To traveling expense to State Meeting.		
Jan. 24—Check No. 3, S. J. Smock	.50	
To rebate due on Mrs. Smock's membership.		
Jan. 25—Dues, Whitley County	\$ 3.00	
Jan. 25—Dues, Oldham County	2.00	
Jan. 31—Kentucky State Medical Association	279.23	
January collections from advertisements in Dec. issue of Journal.		
Feb. 1—Dues, Graves County	4.50	
Feb. 4—Dues, Jefferson County	3.00	
Feb. 8—Check No. 4, Mrs. Irvin Abell, Treas., A. M. A. Auxiliary	29.75	
To A. M. A. dues for 119 members.		
Feb. 8—Check No. 5—Frances Humkey	1.00	
To typist services.		
Feb. 10—Check No. 6 Koehler Stamp & Stencil Co.	1.20	
To 1 stamp for Treasurer.		
Feb. 10—Check No. 7, Frances Humkey	2.00	
To typist services.		
Feb. 10—Sale of Journal, Jefferson County	.50	
Feb. 10—Dues, Franklin County	.50	
Feb. 17—Check No. 8, Bush-Krebs Co.	38.86	
To cuts for December Journal.		
Feb. 21—Check No. 9, State Board of Health	3.00	
To Stamps.		
Feb. 23—Check No. 10, C. T. Deering Printing Co.	32.25	
To 1 M. Letterheads & 1 M. Envs.		
Feb. 28—Payment of Christian Co. Advertisements in December Journal	7.15	
Feb. 28—Kentucky State Medical Association	209.85	
February collections from advertisements in December issue of Journal.		
Feb. 28—Check No. 11, Frances Humkey	1.50	
To typist services.		
Feb. 28—Check No. 12, Kentucky Medical Journal	24.77	
To payment for 2 pages of advertisements from Christian Co.		
Feb. 28—Check No. 13, Mrs. Ernest Sullivan, Treas., Southern Med. Ass'n Aux.	7.00	
To Southern Med. Ass'n dues for 7 counties.		
March 1—Dues, Marshall County	\$ 3.00	
March 7—Dues, Whitley County	1.00	
March 8—Check No. 14, Mrs. Irvin Abell, Treas., A. M. A. Auxiliary	2.25	
To A. M. A. dues for 9 members.		
March 18—Check No. 15, E. Q. Sanford, Agt.	20.01	
To traveling expense for Sec. Treas. R. R. fare, Louisville-Paducah.		
March 18—Check No. 16, Louisville Courier-Journal	.90	
To 30 copies Feb. 21st issue.		
March 18—Check No. 17 Caroline Zaepffel	5.00	
To typist services.		
March 18—Check No. 18, Mrs. L. L. Washburn, Treas., Marshall Co. Auxiliary	11.87	
To 25% commission on advertisements in Woman's Auxiliary Number of Journal.		
March 18—Check No. 19, Mrs. W. R. Parks, Treas., Harlan County Auxiliary	11.87	
To 25% commission on advertisements in Woman's Auxiliary Number of Journal.		
March 25—Dues, McCracken County	6.50	
March 25—Dues, Marshall County	2.50	
April 1—Kentucky State Medical Association	410.09	
March collections from advertisements in December issue of Journal.		
April 1—Dues, Jefferson County	1.00	
April 1—Check No. 20, Mayme Sullivan	2.00	
To 1600 second sheets.		
April 1—Check No. 21, C. T. Deering, Printing Co.	78.75	
To 3 M. stamped envs. & 3 M. letterheads.		
April 5—Check No. 22, Mrs. Irvin Abell, Treas., A. M. A. Auxiliary	4.50	
To A. M. A. dues for 16 members.		
April 27—State at Large Dues	2.00	
Mrs. L. C. Nell		
Mrs. J. O. Jenkins		
\$1.00		
\$1.00		
April 27—Dues, Jefferson County	1.00	
April 27—Dues, Jefferson County	1.00	
April 27—Cash for stamps	.50	
April 28—Check No. 23, Mrs. Irvin Abell, Treas., A. M. A. Auxiliary	1.25	
To A. M. A. Auxiliary dues for 5 members.		
May 2—State at Large Dues	2.00	
Mrs. J. D. Whitaker		
Mrs. C. V. Hiestand		
\$1.00		
\$1.00		
May 2—Kentucky State Medical Association	50.94	
April collections from advertisements in December issue of Journal.		
May 2—Check No. 24 Mrs. Irvin Abell, Treas., A. M. A. Auxiliary	.75	
To A. M. A. Auxiliary dues for 3 members.		
May 2—Check No. 25, Helen C. Blackerby, Treas., Jefferson Co., Auxiliary	200.04	
To 25% commission on advertisements in Woman's Auxiliary Number of Journal.		
May 5—American Medical Association	17.50	
Commission on 14 subscriptions to Hygeia.		
May 5—State at Large Dues	2.00	
H. M. Meredith		
Mrs. N. H. Ellis		
\$1.00		
1.00		

May 5—Dues, Jefferson County	6.50	
May 5—Dues, Jefferson County	1.00	
May 5—Check No. 26, Helen C. Blackerby, Treas., Jefferson Co. Auxiliary		1.00
To dues for 2 members.		
Christine Nell	\$.50	
Dr. L. H. S. Tye .....	.50	
May 5—Check No. 27, Mayme Sullivan		18.50
To 3 M. second sheets & 1,500 postal cards.		
May 5—Check No. 28, Mrs. Irvin Abell, Treas., A. M. A. Auxiliary		4.00
To A. M. A. dues for 16 members.		
May 6—Check No. 29 C. T. Deering Printing Co.		55.75
To stationery and stamped envelopes.		
June 7—Kentucky State Medical Association	66.70	
May collections from advertisements in December issue of Journal.		
June 7—State at Large Dues	\$ 1.00	
Mrs. M. F. Davis.		
June 7—Dues, Jefferson County	2.00	
June 7—Sale of Woman's Auxiliary Number Journals	1.00	
June 7—Mountain Flood Fund	25.00	
June 9—Check No. 30, W. E. Morrow, Sec., Flood Fund		25.00
To donation to Mountain Flood Relief Fund.		
June 27—Dues, Jefferson County	1.00	
June 27—State at Large Dues, Mrs. J. S. Brown	1.00	
June 27—Check No. 31, Meffert Equipment Co.		8.28
To card file and index.		
June 28—Check No. 32 Mrs. P. E. Blackerby, Treas., Jefferson Co. Auxiliary		1.50
To dues for 3 members.		
Mary E. Palmer	\$.50	
Mrs. E. L. Dravo .....	.50	
Mrs. E. L. Henderson .....	.50	
June 29—Mrs. Irvin Abell, Treas., A. M. A., Auxiliary .....	.25	
Reimbursement for dues of Mrs. O. Knight, paid in duplicate.		
June 29—Check No. 33, Mrs. Irvin Abell, Treas., A. M. A. Auxiliary		1.25
To A. M. A. dues for 5 members.		
July 1—Dues, Daviess County	11.50	
July 5—Kentucky State Medical Association	2.47	
June collections from advertisements in Dec. issue of Journal.		
July 6—Check No. 34, Mrs. Irvin Abell, Treas., A. M. A. Auxiliary		5.75
To A. M. A. dues for 23 members.		
July 7—Check No. 35, Mrs. Ernest Sullivan, Treas., Southern Med. Ass'n Aux.		3.00
To Southern Med. Ass'n dues for 3 counties.		
July 11—Check No. 36, Mrs. Irvin Abell, Treas., A. M. A. Auxiliary .....		.50
To A. M. A. dues for 2 members.		
July 11—State at Large dues	2.00	
Mrs. Robert	\$1.00	
Mrs. McNeil	1.00	
July 11—Check No. 37, C. T. Deering Printing Co.		18.25
To 200 certificate cards, 200 registration cards & 100 delegate cards.		
July 11—Check No. 38, Mrs. Horace Rivers Treas., McCracken Co. Auxiliary .....		.50
To rebate on Mrs. Reddick's dues.		
July 11—State Tax .....		.48
Total Receipts	\$1212.76	
Total Disbursements		\$ 743.36
Balance on hand, National Bank of Kentucky		469.40
	\$1212.76	\$1212.76

REPORT OF THE COUNCIL

TO THE HOUSE OF DELEGATES:

The attention of the House is called especially to the report of the Secretary and Treasurer showing that the net balance of September 1st, 1927, is \$7,609.30 as compared with \$9,146.10 in 1926, \$4,996.07 in 1925, and \$1,677.67 in 1924. However, during the year, acting under the instruction of the House of Delegates last year, the investment reserve has been increased from \$3,000 to \$5,000. This favorable financial situation has resulted from a continuance of the advertising income of the JOURNAL which has enabled us to save a small balance above operating expenses.

The two major activities of the Association, outside of its routine organization work, are the publication of the JOURNAL and the medico-legal program and medical law enforcement.

It will be noted that the income of the JOURNAL was \$8,237.39 and that the entire expense of its publication was \$8,121.55; so that it is self-supporting. It is of interest to

compare this with the cost of the JOURNAL in 1906—\$5,152.42—when there was a deficit of \$1,452.72. The Editor has continued to comply with the suggestions made at the Annual Session of the House two years ago, and has not only published practically all the articles submitted by county societies, as well as the proceedings of the Annual Session of the Association, but also, in accordance with the instructions of the House at Frankfort last year, we published the Woman's Auxiliary Number of the JOURNAL in December at a cost of \$808.88 and turned over to that organization, in the success of which we are all so much interested, the advertising income of that issue, which was secured by its members, of \$1,019.28. The policy of publishing all papers submitted by the county societies has possibly been the best index we could have in evaluating the improved medical service to the people of the state. A study of the progress of the profession from year to year, as indicated by the pages of the JOURNAL, can

only afford gratification to our thoughtful members. Our JOURNAL is sometimes criticized by those familiar with scientific publications because it is less selective in the character of its essays, and we merit and invite such criticism because that is the intention of the profession which conducts it. The KENTUCKY MEDICAL JOURNAL is intended to be a cross section of professional opinion in Kentucky for the month in which it is printed. Viewed from this standpoint each JOURNAL is a milestone of progress. From it we are confident that our people of today are getting the most effective medical service that they have ever had. This is not only no reflection upon the profession in past years, but it is, indeed, proof that our predecessors built wisely the great organization for which we are now responsible.

For the past six years the Association has cooperated with the State Board of Health in the enforcement of medical practice and other health laws. For the first two of these years this cooperation cost \$2,400 a year; for the third year \$1,500; for the fourth year \$300 and the fifth year \$150. Last year again the cost was \$150, although the House authorized an expenditure of not to exceed \$1,500. Under our system of court procedure, the constantly changing county and commonwealth attorneys, elected under our political system of the selection of such law enforcement officers, unfortunately frequently results in the selection of men who are not sufficiently energetic or competent to enforce the medical and health, or, in fact, any of the other laws of the Commonwealth. Realizing, as physicians do, the special importance of the enforcement of the health and medical laws, it is natural that our attention should be centered especially in neglect of their enforcement. In those sections of the State where the physicians have joined with other progressive organizations of citizens in the selection of really competent law enforcement officials and judges, there has been no cause for complaint. Complaints of evasion of laws through the courts come from the poorly organized counties and districts which continue to select their officials as rewards for political service, or because of the predominating influence of some special interest, and these conditions can only be overcome by the election of competent officials. This year our attorneys have assisted in between two hundred and fifty and three hundred cases, aided by the commonwealth and county attorneys in many sections of the State. This has resulted in an increased number of convictions for violation of health and medical laws, even over last year when more convictions occurred in any year since 1893, in which year the law first became effective

and a large number of quacks were prosecuted and driven from the State.

We are able to report that careful control by the medico-legal committee has kept the cost of attorney's fees at practically the same as last year, this item being \$2,375 for 1927, as against \$2,125 for 1926, and \$2,625 for 1925. The court costs and expenses of the committee, however, increased from \$305.97 last year to \$562.14 this year. We regret that there is no decrease in the number of outstanding suits and claims before this committee. This means that unjust blackmailing malpractice suits continue to be brought against reputable members of the profession about as often as for each year of the past two decades. The Council especially commends to your appreciative attention the very effective work of Honorable Fred Foreht, the General Counsel of this Committee, who has given so generously of his time for many years for a quite nominal remuneration. Dr. J. B. Lukins, the Chairman of the Committee, has devoted much time and thought to its work and has continued its service on the high plane set by his predecessor, Dr. John J. Moren, who inaugurated the work. It should be clearly understood by the profession that the Association furnished attorneys only for the defense of unjust malpractice suits. It is very important that physicians generally carefully consider the character of such malpractice suits as are being brought and that they read carefully the decisions of the courts published currently in the columns of the *Journal of the American Medical Association* because it is increasingly evident that there has not been a suit decided against a reputable physician in any State of the Union in many years which could not have been prevented if the legal precautions, which should now be known to all of us, had been taken at the right time. The whole subject of malpractice procedure has become definitely technical and, in order to avoid becoming victims of its operation, physicians must acquaint themselves with these procedures as they do with the other complexities of modern medical economics.

Again this year a considerable number of physicians have been convicted in the State and Federal courts for violation of the narcotic or prohibition laws. Acting on your instructions the Council has preferred charges against each of them, before the State Board of Health, with a view to the revocation of their certificates. The Council finds that the administration of these quite worthwhile laws, which are approved by the vast majority of the physicians of Kentucky, has been made unnecessarily irksome to the competent, honest, self-respecting members of the medical pro-

fession by their continued violation by the very small minority who have kept right on violating the plain purposes and provision of the law. Regardless of individual opinion, it should be understood by every physician in Kentucky, and in every possible way the public should be taught, that under the Federal law, narcotic habits are not considered as having a disease and that they cannot be treated by providing narcotics under any circumstances. In the same way it is equally plain that alcohol, in any form, can be prescribed *legally* only for patients who have actually been examined by and are under the treatment of the physician writing the prescription for a definite disease in which such alcoholic medication is indicated. The Council is informed that the Federal authorities are again making a check of prescriptions for alcoholic beverages and it is astounded at the information that it is finding the names of prominent physicians signed to prescriptions containing the names of people whom they have not only not examined but it has frequently been found that they have been out of town at the time of issuance of prescription, and that in numerous instances these prescriptions were filled for the physicians themselves. Such a procedure is absolutely inexcusable and any member of our profession who prostitutes the privilege conferred upon him by law, to secure whiskey or other alcoholic beverages for social or other illegal purposes, deserves no sympathy when he is indicted, fined and imprisoned. The Council, acting under your repeated instructions will continue to prefer charges, looking to the revocation of the right to practice medicine in the State of every physician found guilty in the State or Federal court of the violation of either the Harrison or Volstead Act. It desires to repeat again that the officials charged with the enforcement of these laws cannot relax in their strict construction of the provisions which seem to most of us unnecessary, until the people have been protected from the class of negligent or soft-headed and soft-hearted physicians who pander to this trade and practice in violation of the law.

The membership of the State and County Societies for the year continues about the same as for each of the past four years. We have called the attention of the House from year to year to the fact that about four hundred of our physicians, who are in active practice and who are actively interested in our work, are in and out of the Association from year to year, and, in this way, fail to keep in touch with movements for the betterment of the profession and the public health, and we again urge the House to take steps at this session for an increasingly strict adher-

ence to business methods in the conduct of the affairs of the Association, so that the members will understand that it is incumbent upon them to pay their dues and meet their other obligations to the county and state societies as promptly as they pay their taxes or insurance. During the year, a few physicians, who have failed to keep themselves in good standing, have found that they had to bear the entire expense of their own protection from malpractice suits because they had delayed sending in their dues. Acting under your instructions, members who become delinquent cannot be defended for any malpractice suit which has been brought prior to that delinquency. The Council reports this again so that the members in every county may be given notice that their dues should be paid promptly between January 1st and April 1st.

The outstanding event in the medical history of the past year has been the rapid extension in the organization of All-Time County Health Departments through the direct cooperation of the County Medical Societies. Before June 1st of this year twelve such All-Time Departments had been organized in various parts of the state. During the spring the Mississippi Flood Disaster had concentrated attention of physicians and the public generally to the importance of these health departments as an organized agency to prevent ill health following such emergencies. For example, health measures following the flood cost less in Fulton County where there were six thousand refugees than it did at Columbus where there were only six hundred. Similar experiences through the Mississippi Valley caused everyone to feel that such departments should be organized in other counties as rapidly as possible.

About the first of June the worst flood disaster which has ever happened in Kentucky occurred along the north fork of the Kentucky River and the Big and Little Sandy Rivers. The threat of pestilence following this disaster was the most serious that has confronted the State since the yellow fever days. On June fifth a conference was called at New Orleans which was attended by Doctors Hugh Cumming, the Surgeon General of the U. S. Public Health Service; John A. Farrell, the Medical Director of the Rockefeller Foundation; W. R. Redden, Medical Director of the American Red Cross, and the seven state health officers in the flooded states. From the reports there assembled from physicians in the flooded counties it was apparent that it would require at least eighteen months intensive work before the danger of epidemic would be over in the affected area and it was recommended to the states and agencies represented at the conference that a

cooperative program should be worked out and jointly financed.

We were fortunate in Kentucky that the legal machinery had been created by our Legislature which made it possible for the organization to be extended to the flooded counties. Too much credit for the acceptance of this wise plan cannot be given to Governor William J. Fields for his intelligent leadership and support of this plan. Upon its submission to him, he immediately approved it and signed the commitments for the State of \$2500 annually toward the support of each of the twenty-four new county health departments. Governor Fields had previously approved the state commitment for ten counties. In addition to these All-Time Departments Jefferson and Daviess Counties and the City of Paducah are operating on the all-time plan, although not in exact accord with the law.

Immediately upon receipt of the news of the flood, the State Board of Health had mobilized its entire corps of physicians, nurses, sanitary engineers and inspectors in the flooded area. The Red Cross paid the salaries and expenses of twenty-four County Health Nurses who were transferred to this district also. With these reinforcements the local physicians started an active campaign for typhoid inoculations, and followed this by cleaning the water supply and building toilets. More than half of the population of the flooded area was inoculated for typhoid fever. Following the thirty-day period, to which the Red Cross confines its emergency action, the State Board of Health, again with the approval of Governor Fields, drew from the Treasury its emergency fund of \$15,000 and with this money employed medical students from the University of Louisville to continue the inoculation work under the supervision of the local profession in each county, and this is continuing up to the present time.

In each of the flooded counties, immediately following the disaster, the County Medical Society met and passed resolutions and had posters published warning their people to take precautions against the spread of disease. It is noteworthy that, following all this work, that while the typhoid rate for the rest of the state has increased; that in the flooded area, it has been reduced more than 35% below its previous lowest rate. The Council feels confident that this activity of the profession will add to its prestige and will gain for it greater confidence in the minds of the people of Kentucky than it has ever before had.

Such activities and such successes must cause each of our members to realize the responsibility which has been placed upon his

shoulders and upon the profession as a whole for improvement in public health. Here and there physicians are heard to complain that activities along modern sanitary lines are depriving the profession of a large part of its natural income. Such complaints come from men who are unworthy of membership in our ancient and honorable profession. That the death rate from typhoid fever has been reduced 60% in the last fourteen years; that diphtheria has been robbed of its victims by the early and prompt administration of antitoxin; that the death rate from tuberculosis has been cut in half; that the preventable infectious diseases are constantly decreasing is a matter in which every worthy physician takes pride. Larger and more satisfactory incomes are being received by the progressive members of the profession who are qualifying themselves to, and who are making systematic physical examinations of the apparently well, who are undertaking the dietetic and hygienic management of their families, who are immunizing their patrons biennially from typhoid fever and giving the children in their practice permanent immunization from diphtheria with diphtheria toxin-antitoxin, and who are undertaking the sanitary supervision of the homes of the families in their practice, with a view to seeing that they are securing pure drinking water and have safe and sanitary methods of sewage disposal. These life saving services, when furnished by competent men, are of recognized value to the individuals who secure them, and they are paid for far more gladly and regularly than the mere remedial service of past decades. Charts will be exhibited at this meeting to show continued progress in public health and in practice in medicine in Kentucky. The death rate continues to be reduced. In this connection it is important that our attention again be called to the historic fact that before 1888 any one who desired could practice any branch of the healing art anywhere. The State was overrun with traveling quacks and empirics, as well as the stationary variety. The columns of our newspapers contained more columns of quack advertisements than reading matter. It is important to remind our newspapers and legislators that before 1888 the death rate was practically three times its present rate. This is the best answer to those who say reduce the standard of requirements for those practicing the healing art. It is important to remember, also, that more hospitals are being built, more effective work is being done by the profession than ever before, and, if the counties that are complaining about a shortage of physicians will recognize their value and make provisions for their proper compensation, and will at the same

time stop talking about bad roads and devote their time and money to the building of good roads, so that their people are made accessible, and will develop schools where their own and their physician's children may be educated, they will find no difficulty in securing first class medical service.

During the past year many more county societies have held diagnostic clinics along various lines than were reported during either of the three previous years. This has been particularly true in tuberculosis and no other factor has been of greater assistance in reducing the sick and death rate from this serious disease than these clinics. Careful investigation has shown that the climate of Kentucky is quite as good as that of any other state. This has enabled our splendidly equipped and conducted State Tuberculosis Sanatorium at Hazelwood, in the suburbs of Louisville, to be conducted at a less per capita cost than any other similar institution in the United States. It is important for the medical profession of Kentucky to realize that patients receive at this institution, at a cost to each of them of \$15.00 per week, quite as good, and in many cases much better attention and treatment than is given them at other sanatoriums in distant states at multiples of this cost.

We were able to report last year that the General Assembly had recognized the State's responsibility for its indigent citizens suffering from tuberculosis by the appropriation of \$10,000 for free beds at the sanatorium. The States Board of Health has wisely, we think, made a rule that application for free beds will not be considered from the wealthier counties which have cities of the first three classes, because such counties, through their fiscal courts should pay the bills of their own unfortunates. Naturally applications for these free beds have greatly exceeded the capacity of the institution, and, had all of them been accepted, the appropriation would have been exhausted in its first month. Twelve beds have been set aside at the institution and they will be kept filled with patients who are entirely unable to pay their own way and whose cases constitute a public health problem. The Council notes with regret that many of the applications have been accompanied by political pressure for patients whose families are able to support them, and it urges us to pledge the support of the profession to the State Board of Health to reserve these beds for the worthy poor.

The Council cordially approves the extended activity of the Kentucky Crippled Children's Commission and urges county societies everywhere to continue their enthusiastic co-operation, not only in the holding of clinic,

but in securing the consent of parents for the long continued treatment which is necessary for these unfortunates.

Under the operation of the Sheppard-Towner law, as adopted and approved by three consecutive sessions of the General Assembly, and as repeatedly approved by this Association, numerous clinics for pregnant women and young babies have been organized throughout the state. Every one of these has been held with the cooperation and under the management of the county medical societies. No work which has ever been undertaken by the profession has proven so popular nor more profitable. For the first time in the history of the state, as a result of this systematic campaign, increasing numbers of pregnant women are under constant medical supervision and healthy babies and children are being constantly brought to physicians' offices so that tendencies toward diseases may be recognized and corrected. These activities of the profession are easily the most important social activities for the betterment of the state. We are improving health conditions faster than roads are being built or than schools are being adequately and properly provided with buildings or teachers. We have the most difficult task of the three and it is being done for less than a hundredth of the cost of these other activities of the state and is being done more adequately and more rapidly. Members of the profession should constantly be bringing this to the attention of the public so that they will understand that we are interested in public welfare and that we are making practical all the discoveries of modern science that have a bearing on our health problems, with a view to keeping our people efficient during their normal length of life. It is urged that county societies continue to hold public meetings in various sections of each county where the public may be educated in regard to these necessary measures, and that clinics be held by the county societies for the administration of prophylactic vaccines for the indigent. If this were done actively in every county, it would reduce our death rate to that of other states in the Union that do these things. It should be constantly emphasized that good roads and good schools will only be of value to healthy children and grownups.

The financial report by the Secretary and Treasurer is in great detail, and we trust every member, especially every member of the House of Delegates will read it carefully and thoughtfully.

It should be realized by the members of the Association that the JOURNAL has been published because of the continued active support of our advertisers, and we desire to again

urge the House of Delegates to take steps to bring the importance of the patronage of these advertisers before the various county societies as advertisers pay for the publication of the JOURNAL. The value of the JOURNAL to every doctor who reads it is apparent. This Association guarantees the financial integrity of the advertising columns of the JOURNAL. For these reasons, we feel we have a right to ask our members to patronize the advertisers, or, at least to give them the opportunity to secure their patronage, other things being equal.

These same remarks apply to the exhibits at the annual meetings. These exhibitors pay the expense of the annual meetings. They are carefully selected from among a much larger number of applicants by a special committee of this Council and they exhibit before us the various improvements in medical and surgical technique in a way that would be impossible without these exhibitors. The exhibit this year, will in every way, be the best that has ever been held by the Association. The Council desires to urge those in attendance to carefully study the exhibits and patronize the exhibitors.

The Council has been very much gratified with the extension of the Woman's Auxiliary. Kentucky lagged a little behind the more progressive southern states in supporting this movement, but since we did start we are rapidly overcoming the leaders in the extension of its organization. We congratulate the women on the splendid appearance of the Woman's Auxiliary Number of the KENTUCKY MEDICAL JOURNAL. During the year their active organizations have rapidly extended subscriptions to *Hygeia* and have supported many movements both to improve health conditions and to bring the profession favorably before the public in their several communities. The Council urges that in every county the wives, mothers and daughters of physicians be organized into an active club that will be continually doing things for the welfare of the state.

During July and August of this year many cases of anterior poliomyelitis were reported to the State Board of Health in the Bluegrass section of the state. At its suggestion, Dr. W. L. Aycock, the Head of the Harvard—New England Commission on Poliomyelitis, was invited to come to Kentucky and make a study of the situation. Following the investigation a called meeting of the Association was held at the Lafayette Hotel in Lexington on August 14th, which was presided over by Dr. R. Julian Estill, our President-elect. Doctor Aycock's report and a splendid discussion which followed it helped to arm the profession with all that is known in regard to this

bafling disease and again assured the public that the medical profession in Kentucky accepts the responsibility for the health and lives of its citizens.

It is unnecessary for the members of the House to be reminded that they have absolute control of all matters of public policy which affect the practice of medicine and public health in Kentucky. The public has clothed us with responsibility in these matters. Sufficient time at this session will be devoted to their consideration to enable us to arrive at the right conclusion regarding the continuation of our program. It is the duty of the House of Delegates to instruct its officers exactly as how they want this done.

Respectfully submitted,
R. C. McCHORD, M. D.,
Chairman.

REPORT OF BUSINESS MANAGER

To the House of Delegates:

The usual policy of printing every article, report or material of any description contributed by a member has been pursued. We have only enough articles at present in the office to fill the October Journal, and with the publication of that issue all the articles that have been received during the year will have been published. The following table shows what the Journal has accomplished for the last two years.

	1926	1927
No. of pages reading matter.....	520	711
No. of pages advertisements.....	420	454
Editorials	51	54
Scientific Editorials	2	0
Original Articles	146	198
County Society Reports	40	50
Book Reviews	30	32
Official Announcements	9	18
News Items	63	64
Discussions	96	266
Illustrations	66	65

OUR ADVERTIZERS

It is important for the members to note the advertising income and the financial report of the Journal given in the Report of the Council. It is our advertisers who really publish the Journal for us and in ordinary gratitude we ought to patronize them.

The Journal guarantees every product that is advertised in its pages and no firms are accepted unless they meet the approval of the Council on Pharmacy and Chemistry of the American Medical Association. This makes it perfectly safe for any proposition that is advertised in the Journal to be accepted and other things being equal I respectfully urge every member to give preference to those firms who are helping to make our

Journal bigger and better.

THE INDEX

Each year the Journal publishes a complete index of every special article or item, official announcement, authors and discussions of articles and County Society reports, also a cross index of the name of every physician who takes part in the authorship of an article or discusses the proceedings. Cross indices are added to make easy reference to any subject of the article.

COUNTY SOCIETIES

Too few County Societies have been sending in their proceedings, altho they are holding their meetings regularly. Society reports are always given preference and are the most interesting and valuable part of the Journal. The office equipment for multigraphing letters is available to any secretary in preparing for their meetings and in sending out programs.

Respectfully submittd,
L. H. SOUTH, M. D.

Swine Erysipelas in Man.—Schaap has had three cases of swine erysipelas in human beings in the last two years. In all the infection could be traced to the slaughtering of a sick hog. The animal responsible for the last two cases had been sick only one day, and was thus in the prodromal stage. In all three cases cure was effected by serum from animals with the disease. In one patient, in whom the disease had reached the generalized stage, 40 cc. was injected; in the other two, treated earlier, 20 cc.

Surgery of Pruritus.—Total extirpation of the diseased region was performed successfully by Kuttner in two cases in which the pruritus was confined to the prepuce. Others have applied the principle to pruritus ani and pruritus vulvae with good results. Interruption of nerve conduction by injection of sodium chloride or of a local anesthetic, by incisions designed to lift the skin from the subcutaneous tissue, by nerve section (personal case, pruritus uricularis, described and illustrated) and by resection of the nerve root is discussed. The literature contains a number of observations of operation on the sympathetic for relief of pruritus, but periarterial sympathectomy seems to have been tried only once and then without success.

ORIGINAL ARTICLES

DENTAL HEALTH AND ITS RELATION TO GOOD HEALTH

By R. P. KEENE, D. D. S., Owensboro, Director of Dental Health of the State Board of Health.

The phase of health education I wish to present to you deals with personal hygiene, and is specifically known as Dental Health. It is purely an educational problem and should interest all educators, and those who receive education.

The Dental Health Movement in Kentucky was begun by the Kentucky State Dental Association's committee on Dental Health, and it grew into proportions and importance to merit its beginning, being embraced by the State Board of Health, it creating a special department, known as the Bureau of Dental Health.

In farming great changes have taken place. We safeguard our sires, our grains, our trees, and are ever at work ridding them of the ravages of disease. Is it so with our health problems?

Only in the last decade have we made many improvements in safeguarding health. We now have laws that compel general cleanliness, especially in school buildings. But our laws do not embrace the health of the student. It is my opinion that instruction in dental health belongs in the school system. You may say that such instructions should come from the home through the parent. I agree that it would be an excellent thing, but how many hundreds of parents know anything at all about dental health education? It has not been many years that any of us have known much about it. Since we cannot instruct the parent in the home, we must of necessity begin in the school.

Dr. Charles Mayo, of Rochester, Minnesota, says that 80% of children's diseases arise in the mouth, nose and throat. Also that 90% of deaths that occur have their origin in those parts of the body. This makes us realize we must have scientific dental health. When one remembers that the mouth has close contact with every particle of food we eat, and through this food our bodies are nourished, we realize that the mouth must be clean or it will be the distributor of diseases. The mouth cavity, unlike any other organ of the body, is under your complete control. You can, if you will, keep it clean.

It takes years to outwit disease. Years ago physicians treated diseases after they developed and dentists treated teeth after the condition was established. Now physicians vac-

ciate, inoculate and fight the disease before it is communicated. And so in dentistry we have advanced until we have a new and logical type of dentistry, known as Preventive Dentistry, and we are surely trying to teach the coming generation the value of our teeth, the relation of good teeth to good health and how to prevent decay and its assistant disorders. To the adult with an already established condition of dental caries it is too late for preventive dentistry and we make efforts to correct and supply the loss of teeth, and relieve pain and suffering by means of corrective dentistry.

The child should be taught the value of his teeth, and that they almost entirely control our digestion, our digestion controls our blood supply, and without the latter being good, our health is gone. Our efforts must be centered on the child and on the very young child at that. The school is the logical place to teach dental health and its relation to good health habits. Children are a very important factor in our coming generation, for they are our future citizens.

There is one hope we can hold out to this coming generation and that is that most dental disorders are preventable. An average child begins to get his permanent teeth at 5 years of age. They have been forming in the gums for years, so you see one cannot begin too early. The care of a child's teeth should begin with the pregnant mother. Every mother's diet should not only be sufficient for her own needs but for those of her child as well. Vegetables, two or more a day, should be green or leafy, because they form calcium from which teeth structure is made. Fresh fruits, cereals, such as whole wheat and coarse grains, meat, fish, poultry, not more than once a day, eggs occasionally, water, 6 glasses daily, milk or buttermilk, one quart daily, no fried foods, pastries or stimulants. When the expectant mother knows and realizes what an important part diet plays in the life of her child our first battle for good teeth is won and we are on the way to easier methods.

If the mother has had proper diet and the child takes the advice of people who have studied diet and health, his teeth can be soundly built. The child should eat plenty of fruit, apples are especially good, green vegetables, such as spinach, carrots, celery, lettuce, cabbage and tomatoes. Plenty of milk, one quart daily, coarse bread, such as whole wheat, and hard cereals that will give exercise to the teeth and polish them also.

Clean the mouth and teeth on arising, at bedtime, and after each meal. Decay of the teeth is caused by sugar, starches, and particles of food collecting in the spaces and lit-

tle grooves between the teeth. Here, the ever present bacteria, causes this to ferment and form an acid, which finally dissolves the enamel, and the decay then reaches the pulp or nerve. When decay reaches the pulp or nerve the tooth is practically lost. Sensitiveness to cold or hot or sweets, usually means decay has started.

According to government figures every school day is worth from \$10.00 to \$40.00 per child. Recently surveys have been made and it proves that it costs from \$25 to \$40 per year to educate a child in the grammar school. The general average of pupils who fail yearly is 40%. Now figure for yourself the amount it costs the taxpayers to educate, and re-educate the retarded pupils. You say what has this to do with good teeth? If after making surveys men as reliable as Dr. Mayo inform us that 80% of children's disease are from derangements of teeth, nose and throat, and 90% of deaths occur from diseases that had their origin in the oral cavity, we already know pupils are absent mostly through illness, and retarding is the result of illness, we readily see what an important place good teeth hold in general health. If these statistics related to any other ailment the country as a whole would protect and demand better conditions. The taxpayer should also be able to see how much could be saved if dental health were taught, and pupils' mouths had care. It costs as much to teach a child the same thing the second time as it did the first.

At Andover, Mass., 96% of the school children examined had decayed teeth. Virginia figures show 85% of her children have decayed teeth, California spent over \$4,000,000 to re-educate 60,000 pupils; Minneapolis spent \$545,000 to re-educate 14% of her repeaters. Are these figures not astonishing? Would any any business man allow that great a loss in his business? In a recent partial survey in Kentucky 56% of the diseases of children had their origin in the oral cavity, so you see Kentucky also has an expense that should be curtailed.

The task of cleanliness is not hard. Proper brushing and regular visits to a dentist who can determine if your teeth are staying clean and have no decay, will be the first aid to bettering conditions. He can and will correct anything in its incipency that would become a permanent disorder.

We are all teachers. You, I know realize the value of dental health education. I would say the problem is for you to solve. Will you do it? Get busy in your school. Have a dental examination. Your local dentists will help you. See and prove to yourself the need of dental health education. Work out a plan for yourself or write us for

one. Many schools are now having examinations semi-annually, and they report interesting things.

In conclusion, I want to impress upon you, that to brush the teeth and not brush them well is a waste of time, money and energy. The practical and best way is as follows:

Q. What kind of a tooth brush should be used?

A. It should have a stiff handle bent slightly towards the working end of bristle. The bristles should be hard and genuine Siberian, bleached or unbleached—unbleached for hardest usage. The bristles should be 1-2 inch long—six tufts to the brush with space between—covering a length of about 1 1-8 inches along the support.

Q. Why bristles of this length?

A. So you can readily reach the gingival tissue in the interproximal spaces, especially the lingual side.

Q. Why so hard a brush? Genuine Siberian bristle is very hard, especially the unbleached.

A. A soft brush is useless as it will not blanch the hard gingival tissue when pressed to place sufficiently to change the circulation.

Q. What is the main function of a brush? Judging from the above answer it is not to clean teeth but to do something else.

A. Its main function is to stimulate the supporting structure of the teeth.

Q. How is this stimulation accomplished?

A. On labial and buccal, by pressing the side of the stiff bristles against the hard epithelium, just below and above the junction of the crown and gingiva, while holding the bristles in this bent position against the tissue, a rocking or vibratory motion with the long axis of the handle is made (back and forth only) two or three times and then pass to another spot. Exert about ten pounds pressure to the square inch while doing this. On the lingual, place about one half the brush endwise in the mouth and give plenty of push and pull motion as hard as you can stand, squeezing the tissue up against the bone and teeth straight towards the interproximal crevices.

Q. Is it necessary to stimulate when dentures are worn?

A. These same motions and pressure should be applied to tissue where plates and saddles rest because the pressure of denture interferes with circulation, we have receding bone tissue and flabby gingival tissue, a rolling plate and tenderness and inability to chew hard.

Q. What is the nature of this gingival tissue; is there not danger of injury to it and causing recession?

A. The hard gingival tissue is striated flat cell epithelium, the same as we have in the palm of the hand and on the sole of the foot. This method of stimulation will toughen the gingival tissue and do no injury.

Q. What is the normal appearance of healthy gums tissue?

A. A light, translucent, clear sea shell pink, no semblance of red, purple or congested tissue.

Q. How often should the gums be stimulated?

A. Twice each day going over all surface each time at least three or four times. This usually requires about ten minutes, making twenty minutes a day. But we spend more time than this in shaving, shining and combing.

Q. How long have we used drugs in trying to cure pyorrhea and to heal pockets and to make the gingival tissue healthy?

A. Centuries, especially very persistently and scientifically and in many forms.

Q. Has any drug yet used done any good in any way?

A. No.

PIECE OF STEEL REMOVED FROM THE EYE WITH MAGNET.*

By CLAUDE T. WOLFE, M. D., Louisville.

Patient, O. G., a male, aged 27, automobile mechanic, from the interior of Kentucky. On October 31st, 1926, while repairing an automobile spring, he was struck in the right eye presumably by a piece of steel from the hammer he was using. He immediately consulted his physician who sent him to a hospital where he remained four days and was then advised to consult Dr. J. A. Stucky, of Lexington, Ky. Dr. Stucky had several roentgen-ray pictures made of the eye, which, as you can see, clearly demonstrate the presence of a foreign body in the posterior portion of the eyeball. Dr. Stucky referred the patient to me for removal of the foreign body December 9th, 1926.

Examination showed that the eye was quiet. A small scar, approximately 2 mm. in length, was to be seen at the sclero-corneal junction at about five o'clock. There was slight incarceration of the iris, with beginning opacity of the lens, at a point corresponding to the corneal scar. Tension normal; media slightly cloudy from lens opacity, so good view of the fundus could not be had. His vision was 2-200 in the right eye, and 20-20 in the left.

The patient was immediately sent to the Norton Memorial Infirmary for operation. With the tip of the giant magnet in contact with the anterior surface of the cornea, the

*Read before the Louisville Medico-Chirurgical Society.

foreign body did not respond. Accordingly sclerotomy was performed between the external and inferior rectus about 8 mm. from the cornea. The small tip of the giant magnet was then introduced into the vitreous cavity and the foreign body extracted without further difficulty. The object is a piece of steel measuring approximately 4 mm. in length and 2 mm. in width.

The patient remained in the hospital six days. When dismissed December 15th, the eye was quiet, vision 2-200, with lens opacity about the same as when I first saw him. I advised him to consult Dr. Stucky on his way home, which he failed to do, and neither Dr. Stucky nor I have heard from him since; so no report as to the present condition of the eye can be given. However, I assume the eye is giving him no trouble, as he promised to return in that event.

It is generally agreed that a foreign body within the eye offers an extremely unfavorable prognosis, and even though the object is removed the prognosis is not always good. I also believe the opinion is practically unanimous that, with a foreign body in the eye which cannot be removed, sufficient justification prevails to warrant enucleation of the eye to avoid injury to its fellow.

Jackson says the earliest possible removal of the foreign body is the first thing to be considered in nearly all cases, and it usually should be done at any cost, even to enucleation of the eye. Even after the successful extraction of a foreign body the safety of an eye is not assured, for in the majority of cases useful vision will be lost and the injured eye will have to be sacrificed for the safety of the other. Though the eye seems to do well for a time, it may become the site of a slow uveitis which, after weeks or months, will destroy it.

In the event the foreign body is non-magnetizable, Wood condemns the effort to remove it provided it has remained in the eye for some days or weeks, believing that enucleation becomes necessary through the development of an iridocyclitis.

De Schweinitz believes that while foreign bodies in the background of the eye may be tolerated for long periods of time with retention of good vision, they "never can be trusted," as they are likely to cause degenerative changes.

Wurde mann says that permanent toleration of a foreign body by an eye is so exceptional that it should not be considered. He further adds that foreign bodies in the posterior segment of the eye, if allowed to remain, as a rule not only destroy the sight and cause atrophy of the globe, but may result in

sympathetic ophthalmitis.

Other observers report more encouraging results, including Snell, whose three patients retained useful vision after several years had elapsed following removal of the foreign bodies.

We must, therefore, conclude that in the majority of cases, even though the foreign body has been successfully removed, the prognosis is unfavorable, but that exceptions do occur, and it occasionally happens that the patient retains a useful eye that remains quiet and in no way endangers its fellow. However, an eye so injured, whether the foreign body is removed or not, as Bulson states, is potentially dangerous throughout the life of the patient, and that the patient should be so informed in order to be on his guard and ready to consult a competent ophthalmologist at the first indication of trouble.

DISCUSSION

Samuel G. Dabney: I have seen quite a number of patients with foreign bodies in the eye, and have followed a similar treatment, but not exactly the same, as Dr. Wolfe has described. Personally, I think it is not good judgment to put the magnet to the eye after a roentgen-ray picture has been made, as there is a chance of the object moving from the location it originally occupied, and this change may keep us from applying the magnet to the best point if a scleral opening is decided upon. I recall with some satisfaction that I have never failed to remove a piece of steel from the eye, but that does not mean I succeeded in saving every eye.

I was a little disappointed by the statistics Dr. Wolfe presented showing that the most of these patients eventually lost their eyes. So far as I have been able to follow them, I think most of my patients, if the steel was removed early, have retained useful vision.

An interesting case, seen a number of years ago, because the steel was driven into the vitreous of the only eye the man had, was as follows: About twenty-four hours before I saw the patient, a man aged twenty-two years, a foreign body was driven into the right eye. The other eye had been completely lost in childhood,—a shrunken stump. The x-ray men have become extremely skillful in locating foreign bodies in the eye. In this case the piece of steel was far posterior in the eyeball. The man was immediately sent to the hospital and under an anesthetic I made an incision far backward in the sclera and easily removed the piece of steel with magnet. The man recovered with 20-20 vision and has carried that sight ever since. I have seen a number of these patients recover after removal of the foreign bodies with good vision.

The following case illustrates the necessity of

good x-ray work: I received a telegram one morning from Knoxville, Tenn., merely asking if I would be in the office the next day. I answered that I would. The patient, a man about twenty, appeared the following morning. He said that a piece of steel was driven into his eye three or four days previously and a Knoxville oculist wanted to remove the eye, his roentgenologist being unable to find the foreign body. It was five days after the accident when I saw him. He had a traumatic cataract at that time. One roentgenologist located the foreign body far backward in the interior of the eye. That foreign body was also removed without difficulty by means of a magnet, and after needling the cataract the patient secured vision of 20-40. Some years afterward I was called to Harlan, Ky., to see a patient in consultation, and stopped at Knoxville to see the boy for whom I had removed the foreign body. He still had a vision of 20-40.

Theoretically one might suppose that removal of a foreign body through an incision in the sclera would be followed by detachment of the retina, but such has not been my experience. I am aware, however, that it does sometimes occur, as well as late iridocyclitis.

There are two methods of removing a foreign body from the eye with magnet. Professor Haab, who designed the large magnet now in general use, still favors removal through the anterior portion of the eye. He applies the magnet anteriorly and draws the body around the lens through into the anterior chamber and then removes it. I have employed that method only on one or two occasions. In foreign bodies in the vitreous I am strongly in favor of posterior incision as soon as the roentgen-ray picture is made; the magnet is then inserted in the incision and the foreign body extracted. I have always been able to remove a magnetizable foreign body in that way, but have not saved all the eyes.

I think there is a chance of Dr. Wolfe's patient securing improved vision. He did not tell us whether opacity of the lens was sufficient to account for the impaired vision of 2-200. If traumatic cataract develops, after proper needling the patient may have better vision.

A Simple Preventive Measure Against Tuberculosis and Infectious Diseases in Children.—

Armand-Delille suggests that tuberculous patients should wear a cloth mask (surgical mask) over the mouth when they are being auscultated. He believes that this measure may save many members of the medical profession from tuberculous reinfection. The method has been tried in children with measles. The mask was applied when the children were moved from the measles ward to other parts of the building for roentgenologic or laryngologic examination.

TUMORS OF THE NASOPHARYNX AND ACCESSORY SINUSES; VIEWPOINT OF THE GENERAL SURGEON.*

By J. GARLAND SHERRILL, M. D., F. A. C. S.,
Louisville.

Certain neoplasms springing from the nasopharynx, the accessory sinuses, the tonsils and contiguous soft structures, interest the general as well as the rhinologic surgeon. In the early stages these growths are observed by the rhinologist and are interesting to him throughout the entire course. They are only observed by the general surgeon late in their course of development when their operability is problematical and the necessary surgery is extensive and necessarily of the radical type. In many instances tumors which have been considered benign at the early operation for their relief have recurred and shown evident signs of malignancy.

It is not our purpose to more than mention in passing the milder forms of growths involving the ring of Waldeyer (1884), the so-called adenoid growths of childhood which are so frequently seen in the nose and throat clinics—conditions with which you are more familiar than the writer. These adenoid growths obstructing the vault of the pharynx and interfering with the respiration and with the development of the child are so familiar, both in their pathological and clinical changes, that only passing mention is necessary.

Nor shall we consider the hypertrophied tonsils, but present for your consideration that less frequent class of neoplasms which cause more serious menace to life.

The conformation of the nasopharyngeal structures, the arrangement of the mucous membrane extending directly into the maxillary antrum, the frontal, the ethmoid and sphenoid sinuses, make a fertile field for acute and chronic infections. Obstruction to the drainage of these structures from inflammatory swelling and the prolonged irritation resulting therefrom, would appear to favor the development of new growths. Up to this time, however, the exact causative factor in the production of such neoplasms has not been determined. G. B. New states that in the cases of adenofibromata coming under observation at Mayo Clinic, 1915 to 1919, 456 in number, "A review of the histories does not furnish any etiologic factor or factors that might determine the cause of these growths."

The types of tumors in this region consist of:

- (1) Mesoblastic or connective tissue tum-

*Read before the Louisville Medico-Chirurgical Society.

ors, either mature or immature.

The mature types of connective tissue tumors are found as fibromata, angiomata and myxomata. Any of these may appear as polypi. Endotheliomata are also included in this group since they arise from mature mesenchymal cells lining the vessels.

The term sarcoma is applied to the immature types of connective tissue growths.

(2) Glandular tumors. These are adenomata, which are benign, and adenocarcinomata, which are malignant in type.

These structures resemble the secretory glands and are epithelial in origin.

(3) Epitheliomata—which spring from surface epithelium. The involvement of the nasopharynx is usually secondary from adjacent epithelial tissue.

The simplest forms of growths are recognized as polyps. They spring from the ethmoidal cells and are observed in most instances in the middle meatus. They occur at all ages, chiefly in adult middle life. In structures they have the appearance of an edematous fibroma. In some instances they have considerable amount of myxomatous tissue in their structure, and it is not always clear whether they should be classified as fibrous polyps or myxomatous growths. Apparently they are the result of chronic inflammation of the mucoperiosteum and bone of the ethmoidal labyrinth, in other words, chronic ethmoiditis. A few of them are angiomatous in type. They respond to radium and also may be relieved by clearing out the ethmoidal cells and providing free drainage.

Nasopharyngeal fibromata rarely reach the general surgeon, very properly being treated by the rhinologist or the radiologist. They may spring from any portion of the nasopharynx, one of the adjacent sinuses, or from the pterygomaxillary fossa. Milligan states that they are really of fibrocartilaginous origin and naturally cease to grow as sutural lines ossify.

These growths are relatively rare, occur most in males and in young individuals. They vary greatly in size, grow slowly and when large cause considerable deformity. As a rule they do not recur after thorough removal and show no metastasis.

Sir W. Milligan states, "Although nasopharyngeal fibromata are histologically benign in not producing metastasis, their clinical course may be described as almost a malignant one, and the fact that many are, in parts at any rate, highly cellular, makes the line of division between innocency and malignancy a very thin red line. The exact site of origin is by no means easily determined, and the question whether they are pedunculated or sessile is a point of much importance, both

from a therapeutic and prognostic point of view."

Glandular enlargement only follows infection from obstruction and is inflammatory in nature. The growths of this type arising anteriorly are soft, while those in the vault of the pharynx are usually of firmer type. These tumors are for the most part made up of firm interlacing bands of connective tissue.

Chas. J. Adams reports an unusual growth blocking the pharyngeal opening of the left eustachian tube. It was attached by a somewhat broad base well up on the tube and caused blocking by a ball valve action. It was removed by a snare. The sections consisted chiefly of lobules of salivary gland tissue, separated by wide bands of fibrous tissue and having a narrow band of lymphoid tissue, but no lymph follicles in its structure.

Angioma, frequently called bleeding polypus of the septum is a rare type of tumor in this region. It is usually attached to the anterior inferior part of the septum and appears as a small nodular tumor, mottled purplish red in color. A few cases are recorded which took their origin in the lateral wall. This structure consists largely of vascular spaces with interstitial connective tissue. It is benign and does not recur after complete removal. Even partial removal sometimes results in shrinkage of the remnant of the growth.

Nasal obstruction, frequent and severe bleeding are the prominent symptoms of intranasal angioma. The diagnosis may be readily made by the site of the tumor, its color and its tendency to bleed when touched with a probe.

True myxoma is a rare growth which arises from embryonal mucous tissue, but certain fibromata in this region contain considerable portions of myxomatous tissue and are not infrequent. It is sometimes difficult to decide whether the myxomatous tissue in a complex tumor was originally a part of the growth or a degeneration of the more mature tissue. Certain edematous tumors resemble very closely the myxomatous growths.

Endotheliomata. These tumors spring from the endothelium lining the blood or lymph vessels. It is probable that the endothelioma is of mesenchymal origin. There is considerable difference of opinion upon this point, and according to Ewing (*Neoplastic Diseases*, 1922, P. 300, 310) "Embryological data do not warrant fundamental distinctions between the various cells now commonly grouped as endothelium since all are of mesodermal origin."

The close relationship of the endothelium to the connective tissue may explain the resemblance of certain endotheliomas to sarco-

ma. On the other hand tumors arising from the cells of serious structure more closely resemble carcinoma. This latter type is seldom seen in the nasopharynx.

Ewing also says, "The general pathology of endothelium most clearly illustrates the dual tendencies of these cells, revealing on the one hand the assumption of epithelial qualities and on the other the possession of certain potencies of connective tissue cells."

"The endothelial cell in tumors usually retains some of its distinguishing features on which alone the recognition of the nature of the growth may often be based. The form is polyhedral, often pavement in type and occasionally cylindrical."

Some sarcomas are specially vascular and may show neoplastic endothelial cells in close relation with the immature fibroblasts. These tumors may not be differentiated clinically from sarcomata. Before the diagnosis of endothelioma is reached the evidence should be clear and conclusive.

Sir W. Milligan states that in contrast to the rapid and fatal course of sarcomatous growths endotheliomata are comparatively benign. He records one case with several recurrences, under observation just over five years, and in each recurrence the same histological features of endothelioma were presented. He considers this type of growth suitable for radium, and accounts for its favorable action because of the small amount of stroma and its numerous thin walled vessels and the fact established that the endothelium of lymph and blood vessels is highly radio sensitive.

Sarcoma. This class of tumors appears in the young from eight to twenty years. It grows rapidly, is encapsulated, does not ulcerate until very late, but tends to invade adjacent sinuses. It may be more correct to state that the growth arises in one of the sinuses and extends to the nasopharynx. This type of growth causes obstruction and results in suppuration within the sinuses. It is slow to produce metastasis and the cervical glands only enlarge early as the result of infection. Recurrence is likely if removal is incomplete. Radical and wide extirpation results favorably.

Histologically these tumors are made up of immature connective tissue cells, showing rapid mitosis. They are described as fibrosarcoma, angiosarcoma and myxosarcoma, depending largely upon the character of the tissue present. Osteogenic sarcomas are rare in this region. Ewing states that from the choana and vault of the pharynx arises the chondromyxosarcoma of infants and children.

Adenoma. This is a small and not very important group of neoplasms consisting of

glandular structure, benign in type.

Adenocarcinoma. This type of glandular epithelial growth is somewhat infrequent in the nares as a primary affection. It is more likely to arise in the maxillary sinus. It is rarely observed before forty, but is more often seen after that age than sarcoma. These tumors may spring from the mucosa of the antrum or from the epithelial dental structures, and there is considerable variation in type. These growths show a persistent tendency to the formation of asini, which however do not retain their typical form. Some carcinomas are papillary in type while others are composed of basal cells. In rare instances they are made up of round cells, and according to Ewing these round cell carcinomas probably form the majority of the so-called sarcomas of this region. Because of the absence of alveolar structure and definite epithelial character their true origin is usually overlooked.

Ewing states that melanoma of the nares is a very rare tumor of which he has studied one case, reported by Coley, in which the pigmentation was prominent and the structure carcinomatous.

Melanotic tumors also occur as sarcomata. Guggenheim presented a microphotograph of metastatic melanotic sarcoma of the nose in which the cells were chiefly of the small round variety and there was some evidence of alveolar formation.

Carcinomata of the antrum and nasopharynx vary very greatly in their structure and their clinical course, sometimes growing slowly and again quite rapidly. They are extremely malignant and have a marked tendency to recurrence as well as to glandular metastasis. They usually come under observation after they have progressed beyond reasonable therapeutic aid.

Epithelioma arises from surfaces lined with squamous cells or by metaplasia of other epithelial cells forms tumors with the characters of squamous epithelium. The term epitheloid carcinoma is usually employed to cover the entire group of basal cell and squamous celled growths. Rarely is this type of tumor found in this region as a primary growth. Usually the nasopharynx and sinuses are involved late in the course of an epidermoid cancer of the cheek or buccal cavity. The course is progressive and the outlook unpromising. Only very early and very wide extirpation offers any benefit to those patients.

The most important of these are the malignant growths, sarcomata and adenocarcinomata. The development of these tumors is usually gradual, either springing from the mucous membrane or the subjacent tissues. The growth pushes forward into the antrum

until this cavity is filled and then it appears as a polyp in the nares, having emerged through the nasomaxillary foramen. The sarcoma appears earlier in life, runs a more rapid course than carcinoma, but the latter is more certainly fatal.

Other growths develop from the ethmoidal mucosa and similarly appear in the nasal fossa. These masses tend to recur after removal unless the excision be of radical type. The maxillary growths in some instances obstruct the antrum without entering the nose. As a result the antrum becomes filled with tumor tissue, mucus or mucous pus, and by pressure causes absorption of bony structure. Under these conditions the mass appears upon the cheek or palate. Sooner or later ulceration takes place and further extension occurs. The pressure effects vary in different cases. Occasionally extension toward the orbit occurs, interfering with the lachrymal sac and in some cases causing displacement of the ball of the eye. In these cases necrosis of the orbital plate is usual.

In a few cases the growths extend through the skull, resulting in pressure upon the nerves emerging from the cranial cavity and even upon the brain itself. (New mentions such a case in *J. A. M. A.*, Vol. 79, No. 1, P. 10 to 14).

Even the benign growths may cause much disfigurement, while the malignant types result in great deformity.

These cases usually progress to a fatal termination. Symptoms: The clinical picture is by no means typical. Most cases develop slowly. Some are first noticed because of nasal obstruction, while still others are first evidenced by pain of a neuralgic type, localized in the teeth, temple or head which cannot be accounted for by the usual and simpler causative factor. Earache, burning pain in the head covering frontal, temporal and mastoid regions, have been noted by a number of observers. Such pain is often attributed to neuralgia of fifth nerve.

A few cases of nasopharyngeal tumors have given evidence of their presence first by glandular enlargement in the neck. Occasionally the cervical condition masks and overshadows the primary growth, which may be entirely overlooked. Fixation of the jaws occurs, so that examination of the pharynx becomes difficult or impossible. Mastication and swallowing become seriously impaired. The symptoms presented are often taken to be the result of lues, and needless delay occurs as a result. This is more particularly true when lues is accompanied by a malignant growth in this region, since there may be a temporary amelioration of the symptoms from specific medication. Earache and deafness are

not infrequent. Eye symptoms according to New were present in ten out of forty-six cases. Divergent squint, diplopia, bulging of the eyeball and dimness of vision have been observed.

Some of these growths develop primarily in the sphenomaxillary fossa and quickly press upon the sphenopalatine ganglion and upon the branches of the fifth nerve. In rare cases the Gasserian may itself be involved. Such involvement is evidenced by neuralgic pain and later numbness over the distribution of the fifth nerve. It is difficult at times to differentiate such a growth from brain tumor. Vascular disturbances may occur from direct pressure on the veins, as in exophthalmos, and also by sympathetic nervous involvement. According to New, only thirty-eight of the seventy-nine patients presented nasal or nasopharyngeal symptoms, such as bleeding, or symptoms of nasal obstruction. Fifty-one of his seventy-nine patients with malignant disease had enlarged glands in the neck.

New claims that petro-maxillary growths are quite a distinct group from nasopharyngeal tumors which usually develop in Rosenmüller's fossa. The accuracy of this observation appears doubtful. According to New, in thirty-two cases of hard fibromas observed at Mayo Clinic in fourteen years, 1910-1923, the ages of the patients varied from 10 to 31 years. Twenty-nine (90.6%) were under twenty-five. The activity appeared to be directly related to the age of the patient. Twenty-eight were males, four females. Duration was two to six years.

The clinical picture of fibromas is more typical (New) than that of malignant disease. He says, "They have a definite life cycle, starting to grow about puberty and continuing active until the age of about twenty-five years."

"The tumor is more amenable to treatment in older patients, since there seems to be a spontaneous retrogression after the age of twenty-three or twenty-five years."

Microscopically benign; clinically malignant: This type does not result in metastasis. They may, however, cause death from pressure effects.

The surgical treatment varies in the type, location and extent of the neoplasm. Mention has been previously made of simple adenoid masses which are readily handled by the scoop or snare. They may also be benefitted by irradiation.

The simple types of fibroma are usually relieved by removal, using the snare or electrocautery. Some of these cases, particularly those which recur, may be handled by a more radical operation, such as that proposed by Koehler or that of Moure, as modified by Vir-

ginius Dabney, or by the Killian method.

Frequently recurring growths involving the maxillary antrum and likewise cysts of this cavity may be readily accessible through an incision made in the mouth along the attachment of the upper lip through the mucous membrane down to the bone. The soft structures, including the incised periosteum are lifted from the bony attachment and the wall of the antrum exposed. A free opening through the bony wall of the antrum gives very good access to this cavity and a cyst can be readily removed.

Pedunculated growths springing from the antrum can also be handled successfully in this way. The cavity is packed with gauze, and closes in a short time by granulation. I have successfully employed this method in cyst (mucocele) of the antrum.

Dentigerous cysts may be treated in similar way, the same being true of persistent cases of suppuration of this cavity.

The malignant types of tumor require a more radical method of treatment. Both the sarcomas and the carcinomas of the antrum are essentially fatal maladies and in order to obtain any considerable degree of safety from recurrence, surgical attack must be of the most radical type. Early and radical removal, not only of the antrum, but also of the entire maxilla with extensive and deep cauterization of the attachments of the growth by the actual cautery has given the best results in our hands. Where I have been induced by weight of opinion to eviscerate the antrum and depend upon radium, the results have been most unsatisfactory.

R. Sonnenschein (J. A. M. A., V. 75, No. 13, p. 860, Sept., 1920) gives a rather complete resume of the use of "Radium in the treatment of malignant tumors of the nose and throat." He reports one case of spindle and round celled sarcoma of pharynx which recovered from the use of radium and was well six months later. 2630 mgm. hours of radium were employed by means of needles and plaques in this case.

In addition to the nasopharyngeal growths requiring radical surgery, cysts of the frontal sinus and tumors of the tonsils must be considered, since these conditions often demand radical operative measures. Cyst of the frontal and also of the maxillary sinuses, clinically benign, may cause such bone destruction from pressure and such disfigurement that in many instances radical surgical removal becomes necessary. The open operation upon the frontal or some modification will prove most useful in these cases. The method described above for access to the maxillary antrum through its anterior wall under

the upper lip is the method of choice for simpler forms of maxillary growths or Moure's operation may be employed. The latter is particularly useful when the growth is accompanied by ethmoid disease or suppuration of the lachrymal sac.

Malignant tumors of the tonsil are essentially fatal. They progress so rapidly after coming under observation and are often so advanced when first seen that the simplest examination is made with difficulty. It is difficult to open the mouth sufficiently to correctly estimate the size, consistency or extent of the growth. The most important point in the surgical treatment of this class of tumors lies in our ability to make such neoplasms easy of access. The same logic applies to tumors of the tongue, the parotid and to submaxillary growths. We have found malignant tumors of the tonsil to be made easy of access by following the method of Kocher. This consists in making a central perpendicular incision through the lower lip, division of the lower jaw at the median line and retraction of each half of the mandible laterally. The exposure is so great and the radical removal of the growth so simplified that surprise is expressed by those seeing its use for the first time. Healing takes place with practically no deformity. One of our cases in which this method was used lived seven years without recurrence, dying of pneumonia.

The lateral approach through the neck is never so satisfactory as is that of Kocher.

Some of the radiologic reports are encouraging, and they may stand the test of time. The surgical reports in the malignant cases are not flattering. We have, however, had a sufficient number of recoveries to justify the most radical procedure. A decision between the relative merits of the two plans cannot be made from the present light upon the subject.

The writer is convinced that all the tumors described are best treated by surgical removal when it may be safely accomplished. It should be complete in every case. A suspicion of malignancy should demand extremely radical work. Otherwise, the attendant should seek some other method. This is no place for the timid surgeon.

Complete accord between the rhinologist, the radiologist and the surgeon will produce the best results.

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DISCUSSIONS

Samuel G. Dabney: A case of fibroma of the nasopharynx cured by radium has already been reported by me to this society. Since that report twenty-three cases have been treated in a similar way at the Mayo Clinic (probably more by this time) with excellent results. I believe, therefore, that the first treatment to be tried in this disease is radium. Should it fail, the best treatment is probably "wrenching off" the growth with powerful forceps. This treatment seems both much more effective, and much less apt to cause alarming hemorrhage, than the use of the snare.

I have seen a few cases of malignant disease of the antrum of Highmore. In association with Dr. Sherrill I saw one he has already described. Another was declared inoperable by a general surgeon at the time I first saw him. The most interesting feature of this case was the remarkably slow development, but the ultimate outcome was fatal. There is a strong tendency for these antrum growths to invade both the nose and the orbit.

I have seen a few cases of sarcoma of the tonsil—one fatal case in a child under twelve years old. Of lymphosarcoma of the tonsil I have also seen several. In two of them radium produced brilliant results in regard to the disease in the throat, but both patients died within a year or two apparently of metastasis to the stomach.

In regard to growths in the antrum of Highmore: It may be of historical interest to note that transillumination (now one of our routine measures in inflammatory conditions of the sinus) was first used as a diagnostic measure by Heryng, of Warsaw, in the diagnosis of tumors.

Claude T. Wolfe: Dr. Sherrill has given us an excellent paper on a most interesting subject. He has covered the subject thoroughly. For the

purpose of classification these tumors are divided into the simple and malignant types. Simple tumors are seen most often, but I do not look upon either simple or malignant tumors as being of common occurrence especially if we consider the number of patients we see daily. Polyps are observed quite frequently, but they are not as common as we have been led to believe. In the simple types of tumors we have the ordinary nasal polyp, fibroma, osteoma and cysts. In the malignant types we have sarcoma and endothelioma and epithelioma.

Nearly all these tumors produce identical symptoms in the beginning stages. In the very early stage there is no pain in connection with either the malignant or benign type of tumors. One of the first symptoms of which the patient complains is nasal obstruction, and this is usually attended by a catarrhal process in the form of discharge or infection which necessarily accompanies a condition of this character.

In the differential diagnosis between malignant and benign tumors, the age of the patient must be considered. We know that it is fortunate most of these tumors occur in the antrum as it is in that location they are most amenable to treatment from a surgical standpoint. Sarcoma may occur in very young people. Thompson mentions having seen one in a child of nine years and records another case in a child of four years. Carcinoma and epithelioma occur in very much older people, and these types of tumor offer the least results so far as surgery is concerned. Not often do we see any of these tumors developing in children. Nasal polypi chiefly occur between the ages of 20 and 30 years and are said to be more common in men than in women. They are very rarely found in the young. Obstruction is a symptom which is present in both types of tumors. In the malignant type the progress of the tumor is very much more rapid than in the benign form, and there is greater tendency to involvement of adjacent structures especially the cervical glands. There is always a tendency toward bleeding in the malignant type which is not a characteristic of the benign form, except in fibroma which may become exoriated when of course bleeding occurs. The rapidity with which the growth develops is very much more marked in malignant than benign tumors, and pain is a constant symptom of the malignant type.

As to the method of treatment: In the benign type and in simple polyps the best treatment is probably the snare. A cold wire snare is passed around the tumor and instead of cutting it away after the wire is firmly tightened we simply pull the growth until it separates endeavoring to remove the entire base. In fibroma and osteoma we have to depend upon surgery or radium. I saw the first patient mentioned by Dr. Sherrill. We implanted radium

needles and the results were phenomenal to me.

It seems as though both Rouge and Moure have devised operations that will likely supplant a partial or complete resection of the jaw, especially in the early stage of malignant tumors. The Rouge operation is especially mentioned in recent literature. These two operations to a certain extent have superiority over resection, either partial or complete, of the upper jaw. In the Rouge operation he has an assistant stand behind and retract the lip, makes an incision at the junction of the lip and gum extending through the periosteum, retracting the soft structures until he has the lip well upward over the nose. In that way he exposes the interior of the nose sufficiently and avoids the ugly scarring deformity which results from complete or partial resection of the upper jaw. In the Moure operation he begins the incision at the inner canthus which is extended downward along the side of the nose reflecting the soft structures, cutting through the nasal bones, and in this way exposes the antrum and interior of the nose to practically as good advantage as in making an incision for resection of the jaw.

These tumors offer us more when they involve the antrum. Carcinoma and sarcoma involving the ethmoid labyrinth are practically hopeless unless benefit can be obtained from radium.

Malignancy of the throat most often involves the tonsil, soft palate or uvula. Very rarely do we find malignancy involving the posterior wall of the pharynx. I believe in these cases surgery should be undertaken as early as possible.

As a differential point we must distinguish between syphilis and malignancy. In sarcoma we do not find involvement of the cervical glands as early as in carcinoma, and the patient may have a syphilitic process engrafted upon malignancy of the tonsil. In many instances we must rely upon the laboratory to help make the differential diagnosis. A positive Wassermann reaction does not exclude malignancy, because the patient may have syphilis and malignancy at the same time. When doubt exists a small piece of tissue may be removed with punch forceps and submitted to pathological examination.

Adolph O. Pfingst: Malignant growths in the nose and nasopharynx have always been of interest to me. It seems that sarcoma is a little more frequent than epithelioma. The mucous membrane of the nose furnishes a very favorable field for confirmation of Cohnheim's theory of cell detachment and inclusion, because we have here three varieties of epithelium. In the lower portion of the nasal cavities we have squamous epithelium practically a continuation of the skin into the nose, then transition into columnar, the higher in the nose the ciliated epithelium. Such transitions of tissues furnish a favorable field for the development of malignant growths. Sarcomata that develop in the nose and in the an-

trum are largely of the small spindle cell and round cell types. As Dr. Sherrill said they are slow in their development, but that is only true so long as they remain within the confines of the antrum. When they penetrate the nasal cavity their growth is very rapid, especially the small round cell varieties. The large cell type which contains many giant cells is slower in its growth, and is less malignant than the other varieties.

One peculiarity about these growths that Dr. Sherrill did not mention is that they seldom metastasize.

I am sure that if these cases would seek the help of the rhinologist earlier and thus lead to earlier diagnoses we could save more of these individuals. It is a difficult problem in the beginning to make a diagnosis. First, because the individual does not come for diagnosis. Many people who have secretion in the nose, either bilateral or unilateral, do not pay much attention to it. Even if they do seek advice for chronic unilateral discharge, the chances are the rhinologist would not always be able to diagnose an antral neoplasm readily. However, unilateral discharge of long standing which does not yield to suction and irrigation should certainly arouse suspicion of a more serious disease within the antrum. We should not attach too much importance to transillumination. Sometimes the growth is very small, especially epitheliomata which do not attain the size of the other types, and in such cases we cannot attach a great deal of importance to transillumination. Then, too, the bone of one side may be thicker than on the other and interfere with this method of diagnosis.

The question of glandular involvement is interesting. I think Dr. Sherrill is mistaken regarding enlargement of the glands on the side of the neck. In malignancy of the upper part of the nose and pharynx we find that the suboccipital and retropharyngeal glands are involved. These glands are not easy of detection. The glands below the angle of the jaw referred to by Dr. Sherrill result from tonsillar disease and affections of the teeth. Sarcomata develop largely from the periosteum and perichondrium of the nasal septum. They also develop from the fibrous tissue covering the turbinates. Epitheliomata develop from the mucous membrane of the antrum.

I agree with Dr. Sherrill regarding treatment, that in malignant tumors resection of the superior maxilla is the indication. It seems to me that the proper method of procedure would be a resection followed by application of radium to destroy possible diseased areas in the soft tissue not removed.

L. Wallace Frank: We have had several cases of malignancy of the soft palate and tonsil. About two years ago we saw a woman with bilateral sarcoma of the tonsil, proven so microscop-

ically, whom we treated with radium. As a test of radium it was not fair in that the patient had large glandular masses in the neck. Following treatment the patient was exhibited before a meeting of the Jefferson County Medical Society. The tonsillar tumors and enlarged glands had disappeared. The patient died about twelve months later from internal metastasis. Should such patients be seen early and treated with radium the results would be more likely permanent. So far as sarcoma is concerned the primary results are usually favorable whether treated with radium or the x-ray. In carcinomatous growths of the soft palate or tonsil we may eradicate the primary lesion, but the probabilities are the patient will develop metastasis. We believe all these patients should have in addition to local radium or diathermy if that method is preferred, a surgical operation upon the neck with excision of all the gland bearing area.

Regarding malignant growths of the superior maxilla, we are of the opinion that excision combined with the use of the actual cautery offers the best results. In those growths where the periosteum, mucoperiosteum and bone are involved the effect of radium is practically nil. Unless radium is used until the bone sloughs away no benefit is accomplished. What effect radium will have on the adjacent structures such as the eye we do not know, nor can we determine how deep penetration will be from diathermy. We believe the actual cautery is the better procedure. When it comes to handling malignancy in this locality all thought of cosmetic results must be forgotten. We must treat the pathology without regard for the patient. We must eradicate the pathology in its entirety if we expect to secure favorable results. By secondary plastic operation the cosmetic results may be improved.

Jesse H. Simpson: The conclusions at which I have arrived from observation are along the lines emphasized by the last speaker. Tumors of the soft parts about the nose are best treated with radium. Tumors that are confined to bony cavities where the bone is undoubtedly involved in the early stages cannot be successfully treated with radium. They must be treated surgically. Malignant tumors involving the posterior ethmoid and sphenoid are invariably fatal. The antrum is the bony cavity that offers the greatest hope for success so far as malignant tumors are concerned.

As to Dr. Sherrill's methods of approaching this part of the human anatomy, I have seen him perform one or two operations which he described. His technique was most skillful and I was surprised at the beautiful cosmetic results obtained by his method of making the incision.

John W. Price: I would not discuss this subject except for the fact that in 1914 Dr. Louis Frank was kind enough to refer to me a patient who had tumor of the antrum of Highmore. In-

vestigation disclosed that the growth was a carcinoma. We performed radical removal of the superior maxilla of one side, using the Ferguson incision with slight modification, following the operation by free use of the actual cautery to the edges of the bone and soft parts after the removal. This case was reported before the Southern Medical Association a year or two later.

The point I wish to make is, to agree with some of the preceding speakers that where we have a known case of malignancy of the antrum, of Highmore radical operation must be considered. I think the Ferguson incision is perhaps the one of choice. The deformity following the operation is infinitesimal as compared with the benefit to the patient. I have a photograph of a patient upon whom I operated by this method, taken a few weeks afterward, and one has to examine the patient closely to see the linear scar. The place is a very favorable one to make the incision and the tissues heal kindly with minimal scar. The deformity following the operation is so infinitesimal that I think we may disregard it entirely in considering the operation. I believe the results are far more satisfactory from radical surgery than from the use of radium.

As regards tumors of the frontal sinus: I have had only one such patient to deal with, and that was a case the late Dr. A. M. Cartledge operated on in 1901. The woman is still living. She has had all this time an opening of the frontal sinus on the left side. My recollection is that the tumor was a fibroma which had caused destruction of the anterior plate of the frontal bone, but there was no destruction of the supraorbital plate and no involvement of the eye. The posterior plate was also involved and the dura is exposed at the present time. This opening has been present for about twenty-six years, the operation having been performed early in 1901. Dr. Cartledge performed a secondary operation with an effort to close the primary defect but it was unsuccessful. He removed the whole frontal bone and brought the flaps together, but there was evidently some sloughing because the opening has never completely closed. Dr. Cartledge is to be congratulated upon the result he obtained at that time in the then state of our knowledge of surgery and particularly cranial surgery. The patient was seen by Dr. W. T. Bull, of New York, fifteen years before the operation and the diagnosis was made at that time of a frontal sinus tumor. Dr. Bull remarked that it was not an emergency case and there was no necessity for immediate intervention. He did not believe the tumor was malignant. The patient later began complaining of headache and subsequently the tumor caused destruction of the frontal plate. Shortly thereafter she was taken to the hospital and operated upon. The

care that has been required during the intervening twenty-six years may be of some interest. The sinus is merely irrigated with plain tap water and thus kept clean. This is done every time she bathes her face. For a long time there was some drainage into the nose which I think was due to a certain amount of involvement of the ethmoid. As time has gone on there has probably been healing of the ethmoid cells, although seven years ago she had some nasal polyps which Dr. Dabney removed. Since these polyps were removed she has had freedom from symptoms, there being no odor and no discharge from the nose or frontal sinus opening.

J. Garland Sherrill (in closing): While it is not claimed that benign growths of the nasal cavities very frequently undergo malignant change, we may be misled by the examination of a portion of the tumor,—finding it benign,—while other portions of the same growth may show evidence of malignancy. My experience has been that very few patients with sarcoma have glandular involvement in the neck. I am glad Dr. Pfingst called my attention to the location of these glandular enlargements at the back of the neck. Quite a divergence of opinion has been expressed by two prominent observers on this subject. Sir W. Milligan says: "Enlarged glands are never a significant feature unless there is superadded sepsis." Some of the enlarged glands may be due to suppurative lesions. Gordon B. New claims: "Fifty-one of seventy-nine patients had enlarged glands of the neck." That impressed me as being a very high percentage and is contrary to my own observation.

The principal point to which I wish to call attention is this: In dealing with malignant growths, particularly in this region, the operative procedure should be radical. I prefer the use of radium following the removal of growths in this region.

Role of Purification of Insulin Preparations in Phenomena of Hypoglycemia.—Chabanier, Lebert, Lobo-Onell and Lumiere assert that the morbid phenomena of hypoglycemia observed sometimes in the course of insulin treatment occur only with highly purified insulin. About 600,000 injections of a slightly purified insulin were used by the authors in diabetic patients cured of glycosuria, and in nondiabetic patients with atonic ulcers. Phenomena of hypoglycemia developed in a minimal number of cases, from occasional causes. The relatively high percentage of hypoglycemia reactions in the American statistics is attributed to the use of highly purified insulin. Foreign substances contained in the nonpurified insulin seem to reduce its hypoglycemia-inducing effect.

GALVANISM IN THE TREATMENT OF INTERNAL HEMORRHOIDS, WITH REPORT OF CASE.*

By A. L. KINCHELOE, Owensboro.

It is indeed a pleasure to me to have the opportunity of presenting to the Daviess County Medical Society this paper for your consideration, reciting to you a few cases and relating my experience in the treatment of internal hemorrhoids by Galvanism.

The history of hemorrhoids antedate the history of medicine, and the first treatment of hemorrhoids was by an application of an aqueous solution brewed from herbs, followed by dilatation of the sphincter muscle. Undoubtedly the oldest surgical method was that of ligature, and practiced by Hippocrates. For ages the medical profession lost sight of the rectum as a great reflex center, and one of the most important fields for focal infection, the latter by reason of the fact that the superior hemorrhoidal veins return the blood from the rectum into the inferior mesenteric vein and directly to the portal circulation. The middle and inferior hemorrhoidal veins return the blood from the anus and the circum anal region by way of the internal iliac into the general circulation. The rectum is supplied principally by the sympathetic nerves, hence we have our marked reflexes. The ano-rectal region bears no little significance when we consider reflexes and infection.

When having in mind an object to be reached, a goal to attain, one thing should be paramount in our minds, what method or plan may we adopt in which we are likely to meet with the least resistance and thereby accomplish the desired results?

Four vital points should be gravely considered in adopting a remedy for the treatment of human ills:

1st. Does it jeopardize the life or limb of the patient?

2nd. Does it hold out a promise for cure, more hopeful than any other other?

3rd. Is it safe and without any untoward sequelae?

4th. Does it cause undue pain and disturb the patient's daily routine too effectively?

All of these may be answered in the affirmative as regards Galvanism in the treatment of internal hemorrhoids.

The question has many times been asked, "Will they return after the treatment of Galvanism?" I answer you thus, has there ever been a remedy since Galen or Hippocrates used in which we could promise our patient

*Read before the Daviess County Medical Society.

that he would never have hemorrhoids again? If so I am densely ignorant of such. I know that some good surgeons have a rather clever way of advising the patient that the very best way is to go to the hospital and have the hemorrhoids taken out by incision and then he will never have any trouble. I asked a very good surgeon friend of mine if he could operate for hemorrhoids and give the patient an absolute assurance that he would never have them again. He said he could, and I asked how, and he replied he would excise all of the blood vessels. I decided at this time I would not let him operate as I preferred a little circulation around the rectum. Do you you think this good surgery? Just so long as you have hemorrhoidal blood vessels you may have hemorrhoids, whether you are treated by Galvanism, surgery, injection or any other method, but you are not likely to have after a proper treatment, because the patient has, or at least should have learned to observe better the laws governing the cause of such ailments. Similar causes produce like effects. This is true in regard to the laws of science, is it not? The same condition under an unfavorable environment may cause a return, not of these, but new ones. But we can honestly tell our patients that under proper observance of the laws of health he will never have a recurrence.

Does surgery insure an immunity? You can not honestly answer this in the affirmative.

Does Galvanism insure an immunity? No.

Does any other method insure an immunity? Not that we know of. I can honestly tell you that where the patient has followed the treatment rigidly I have had no complaint. However, I have observed a number of cases of hemorrhoids in patients who have been previously operated, and one especially, a very bad case of internal and protruding hemorrhoids who had been operated twenty years previous. I treated him probably five or six times in as much as he had a very bad case, some of them fibrinous; he lives today a witness for Galvanism.

Before entering into a discussion of the treatment of hemorrhoids let us find a definition: A benign tumor caused by a varicosity of the vein or capillary blood vessels, thereby producing vesical stasis, hyper-alkalinity, pain, inflammation and swelling. Here we have the pathology that exists in hemorrhoids, and is due to some vasomotor disturbance, causing a stasis or an incomplete circulation. Then in order to relieve this condition, would you seek to destroy a part of the circulation, or would it be good judgment to establish a normal circulation which we are able to do by the Galvanic current, the object para-

mount in the procedure is to bring about a wholesome and healthful condition of the circulation.

The walls of the blood vessels are composed of involuntary muscular fibres, and are supplied by the vasomotor nerves, which control the involuntary fibres. The positive pole of the galvanic current sedates the vasomotor nerves, constricts the blood vessels and shrinks or starves the tumor. The positive pole carries an acid medium. The blood stream is alkaline and by introducing the acid medium it neutralizes the alkalinity, therefore destroys bacteria, reduced inflammation and aborts pain. The positive pole carries an oxygen medium and serves to build up or construct a new and healthful tissue. When we treat a hemorrhoid by Galvanism we are not only looking after a small circumscribed area but are helping to reconstruct the tissue throughout the ano-rectal region.

I have observed that after the treatment of a given hemorrhoid as many as two of its life long companions vanish like a dream, caused by the action on the vasomotor fibers. In some cases of not long standing two or three treatments suffice to make them disappear. However, it is not good practice to discontinue observations in these cases for more reasons than one.

In Galvanism I think we have one of the very best remedies for internal hemorrhoids, and I think a very conservative one. It is not altogether an easy procedure and requires some skill, perseverance and patience to execute it properly. It certainly can not be done in a careless and indifferent manner. If every case was just a plain, uncomplicated and simple case of internal hemorrhoids it would indeed be easy, but we so often meet with fissures, tags, ulcers, rigid sphincters, polypi, hyper-sensitive, nervous systems, and other conditions that add to the burden.

Personally I am quite sure that Galvanism is as effective in the treatment of internal hemorrhoids as surgery, and has many advantages over any radical operation in that there is no danger of hemorrhage, attended with practically no pain in uncomplicated cases, no slough, no protrusion after the first one or two treatments. The results are produced by chemical changes in the hemorrhoid and not by burning or cauterizing as we may suppose. There is no destruction of tissue, hence no danger of infection.

This treatment in conservative hands is effective in the old and infirm and will give positive results in these cases, whereas they may drag out a miserable existence throughout the remainder of their lives. Don't you

think that this class of cases at least should have the advantage of a trial of Galvanism? This, if no other reason should commend it to the profession. And then if it is good for the aged and infirm, why not for all?

As far as I know we have no recorded cases of mortality by the Galvanic treatment. If any one knows of a case I would like to have it. I have not had a sequelae of any consequence. Had one case of post operative hemorrhage, which recovered.

I am asking you to allow me to give you a report on 560 cases as reported by Pennington, of Chicago, and taken from the records of St. Mark's Hospital. This report was made in the National Medical Journal a few months ago. 536 were perforated by the ligature method, 15 by clamp and cautery and 9 by the Whitehead method. There were two deaths from broncho-pneumonia, 58 cases of constriction, 52 of tags, 6 of fistula, 5 of secondary hemorrhage, 2 of submucous abscesses and one of fissure. The stay in the hospital was ten days for the clamp and cautery, 21 for the ligature, 26 for the Whitehead method.

In the Mayo Clinic Buie reports the patient remains in bed for four days. Digital examination is made occasionally during the second week and the patient can be dismissed permanently in some twelve to fifteen days. I ask you to contrast this with the slight inconvenience of coming to the office say six or eight times at the most. In the meantime suffering but little pain, and comparatively no loss of time and no hospital bill. No sloughing, no scars, no danger of hemorrhage, no constriction, no incontinence, no untoward sequelae. I have had a good many grateful patients who are proud to know that they are cured, and I believe that they will tell you that they appreciate what I have done for them.

Pennington estimates that about 10% of the patients referred to him have been operated. Some of them two or three times.

As to the injection method I will say that my experience has been limited. I do not think that it deserves the condemnation that it has received at the hands of some members of the profession. Tirrell, of Richmond, has used it in many cases with gratifying results, and speaks of it very highly. My objection to it is that you sometimes get a slough, and I am not fond of a slough in the rectum. We avoid this by Galvanism.

I wish to recite to you a few of the cases that I have treated that may be of interest:

Case No. 1, had hemorrhoids about a year. Disposition to bleed and protrude, considerable loss of weight and unable to earn a living.

Given treatment by Galvanism June 21st, 28th, and July 8th, 1926. Returned July 15th for inspection, dismissed cured. Since this time has gained his normal weight and has no trouble.

Case No. 2, retired farmer, 71 years of age, has had hemorrhoids 50 years. Scarcely able to come to the office. Examination revealed marked case of internal, prolapsing hemorrhoids of the fibrinous type, with marked erosions. Gave Galvanism over a long period of time, three months, on account of the nature and long standing of the case. At the end of this time pronounced cured.

Case No. 3, male, 54 years, farmer, has had hemorrhoids for ten years. Stated to me that during last summer he had to keep one hand in the lapel of his shirt while sucking tobacco, which he used to keep his hemorrhoids replaced. This patient had a post anal ulcer, and the first treatment gave him a good deal of pain, but he returned in due time, took the second treatment, and said that the first treatment was worth \$1,000. Hemorrhoids never protruded after the first treatment.

Case No. 4, male, 47, had hemorrhoids for 25 years. Had done no work for more than a year. After first treatment never protruded, and after five treatments was dismissed cured.

Case No. 5, laborer, 74 years, had hemorrhoids and constipation 20 years. Examination showed large protruding and strangulated hemorrhoids. Incised and removed the clot and in five days removed external hemorrhoids. Returned in ten days, gave Galvanism for internal hemorrhoids. Never saw him again, but his son informed me that he had perfect results, which I doubted. The above case is a father of case No. 4. They were both very grateful patients.

Let us make mention here that I have never treated but one case of hemorrhoids in a patient that did not give a history of same in one or both parents. I am persuaded that this ailment is hereditary.

Case No. 6, male, 71 years, farmer, was operated for hemorrhoids 20 years previous. Examination showed mass of large marginal and internal hemorrhoids. Patient looked bad and felt bad, I am quite sure. Was not able to work all day without stopping to rest. Gave him four or five treatments, and he was instructed to return in three months for inspection. After my recovery from a long spell of sickness I had a very grateful letter from him in which he stated that he was feeling like a boy, and wanted to thank me for what I had done for him.

I have recited to you these cases, not in de-

tail, but in fact, and I want to assure you that there is nothing that adds more charm to life than to see and feel that you have been able to relieve the suffering. And I want to take this opportunity to thank the good doctors of Owensboro and Daviess County for the many kindnesses shown me, and will say that if I can only prove myself worthy of the trust by relieving the many sufferers from this malady, then I shall think your efforts in saving my life have not been in vain.

OTITIS MEDIA, CHRONIC PURULENT.*

By HUGH H. RICHESON, M. D. Louisville.

This condition has been defined as a discharge from the middle ear which has existed either continuously or at frequent intervals for more than three months. All physicians have patients that have discharging ears and impaired hearing due to this condition, but many of the patients do not want treatment or give little thought to it, until the discharge becomes more profuse and has a bad odor. This is especially true in the clinics, where the treatment is not carried out in the acute stage. This leads one to think of the causes of these chronic discharging ears. Kerrison says that about twenty per cent of these cases are due to the exanthemata, such as scarlet fever, measles and diphtheria. These patients have their resistances lowered by these diseases and the middle ear is infected and remains so for several weeks. During this time many drum membranes rupture spontaneously and others are incised, and the canals are irrigated, but with their lowered resistance and many times an insufficient opening in the tympanic membrane the mastoid cells become involved, also the epitympanic space containing the ossicles. The symptoms may subside, the discharge become less or only a slight amount in the canal, but the infection is in these cells or the epitympanic space which prevents the perforation in the drum from healing. The necrosis continues but there is no pain over the mastoid nor headaches and thus the family and patient give little thought to it, thinking that it will soon be alright.

Now in the adults the development of a chronic otitis media is not as frequent; but most of them develop after influenza, pneumonia, typhoid and added to these are tuberculosis, syphilis and diabetes, which lower the resistance and the recuperative power. Frequently in these last named patients, there will be a discharge without any acute symptoms. These patients will give little thought to the condition until an acute exacerbation,

which in the majority of cases there is an increase in the discharge, pain and swelling over mastoid, headache, increased temperature and the hearing more impaired. These cases are not difficult to diagnose, as they simulate an acute mastoid, but the slow destruction that has been going on in the mastoid makes the condition more grave than the simple acute mastoid.

The complications which one should look for are sinus thrombosis, this is the most common in childhood, brain abscess, involvement of the inner ear, blood stream infection, which is more common in the sinus involvement, and meningitis. When these complications arise with the external symptoms, they are anticipated, but they may arise without any external evidences. There may not be any discharge or sagging of the posterior superior canal wall. The only symptoms are pain in the head, increased temperature, say 101° to 104° ; perhaps stiffness of the neck, dizziness and vomiting. All of the symptoms may not be present at the same time but any one or two are very serious. These symptoms may be confused and not be attributed to the ear, but to neuralgia, a cold, or indigestion.

The importance of some procedure that will stop this chronic otorrhea is recognized as is stated by Ballinger, "Life Insurance Companies have justly refused policies to persons affected with chronic otorrhea, and have granted them when an aural surgeon of repute has made a written statement that they were cured by the radical operation."

In order to give a prognosis and institute proper treatment much depends upon the amount and character of discharge, the position and extent of the perforation, and the x-ray examination of the mastoid. If there is a discharge that has an odor, one would at once think of bone destruction which has been going on for some time in the epitympanic space and also in the mastoid cells. If the perforation in the drum membrane is in the lower posterior quadrant and the discharge has no odor, one can expect good results by therapeutic measures and care to the nose and nasopharynx.

Many cases of otorrhea in the young that have existed from several months to one or two years have been cured of this discharge by the removal of the tonsils and adenoids, after which the perforation healed. If, however, the perforation is in the upper posterior quadrant and extending to the annulus tympanicus or the attachment of the tympanic membrane, which shows that there is necrosis of the ossicles. Often when this condition has existed for some time there are granulations coming from the middle ear, as well

*Read before the Jefferson County Medical Society.

as cholesteatoma. When one has this type of ear there is little that can be done except a radical mastoidectomy.

The x-ray is very valuable in diagnosing the amount of involvement as well as the repair that has gone on in the mastoid cells, whether one has a pneumatic or a sclerosed type of mastoid, whether there is a large cell either in the tip or in the zygomatic cells that has remained during this process of destruction and repair. Also the x-ray is valuable in determining the position of the lateral sinus, so much so that if the sinus is far forward and the mastoid is of the sclerosed type, the operator knows that the cavity will be small and he can guard against exposing the sinus or perhaps injuring it.

If the local treatments do not give results, one can assure the patient that an operation is necessary. Now, there are mainly two types of operations that have given the best results, the modified radical and the radical mastoidectomy. It depends upon the amount of pathology found in the middle ear and mastoid cells that will lead one to decide which type of operation to do. If there are no polyps in the canal and the posterior canal wall is not involved, when the hearing is not greatly impaired, and the patient is young, good results have been obtained by the modified radical. This operation has been done by Jenkins of England and reported cases in the *British Journal*. He gives about thirty-eight cases operated in this manner with very good results. He is careful to remove the incus, after the adhesions in the aditus ad antrum have been removed. He has found that of the thirty-eight incuses removed only four had no pathology. He states that he advises the patients that a radical operation might have to be done later.

In going over a very limited amount of the literature on this subject, it seems that the radical operation is the one of choice, especially when there is a history of a discharge over a period of years, and the physical and x-ray findings show an extensive involvement; not an involvement of tip or the cells over the sinus especially because as stated before these cells may have undergone repair and be sclerosed, but in the antrum and vault, and also the adjacent cells.

The radical operation as was first done by Ballance of England and Dench in this country, has given good results. The main points in this operation are the removal of all diseased tissue and a more thorough aeration of the cavity, this is obtained by the large meatal flap and the taking down of the bridge, throwing the middle ear cavity into the external ear. Great care must be exercised in taking down the posterior bony canal

wall, when one remembers that the facial canal follows the canal wall in the lower segment just beneath the attachment of the tympanic membrane, other landmarks and danger points are the horizontal semicircular canal and the round window containing the footplate of the stapes. When all diseased tissue has been removed and the mouth of the eustachian tube has been curetted, so that it will be closed by adhesions to prevent a tubal discharge, and the blood is removed from the cavity and Thiersch grafts are applied to the cavity, care being taken to remove all the fluid under the grafts by tube and mouth suction. These grafts are held in place by small pledgets of cotton with strings attached, then the cavity is packed with plain gauze. The pledgets are removed on the fifth day, and about the eighth or tenth day a small dressing is applied to the posterior incision and the canal left open and irrigated.

The above method is used by Dench. The after treatment is very important, but when the skin grafts dermatize, the cavity will remain dry and one does not have the granulations that would be otherwise. Of course this large cavity will need to be irrigated from time to time to remove the accumulations of outside debris.

DISCUSSION

Samuel G. Dabney: I have enjoyed Dr. Richeson's paper and think he has given us a very good resume of the subject of chronic suppuration of the middle ear. I was particularly interested in what he said about the different varieties of chronic middle ear suppuration. As we know the prognosis depends a great deal upon the site of the perforation. I think he might have emphasized that point a little more, but he mentioned it. The importance of this was forcibly impressed upon my mind some years ago by the case of a man with chronic middle ear suppuration who was sent to me by an insurance company. They stated in their letter that they never accepted a risk in which the perforation was in the attic, that if I found this man had a perforation in the attic in the posterior part of the drum membrane he would be rejected. Fortunately he had no such perforation. That shows the great importance they place on the situation of the perforation, even disregarding the presence of polyps, etc. Perforation in the anterior and lower part of the drum membrane attended by an occasional discharge, with free drainage and without other symptoms or complications, is not according to modern ideas a contraindication for insurance.

I think the pendulum has swung backward somewhat in the treatment of chronic middle ear suppuration. I do not believe there are as many radical mastoidectomies performed now as twenty years ago, and chronic suppuration of the

middle ear, involving the lower part only, with free drainage and without symptoms or complications, is not necessarily regarded as serious. I believe it was Wilde who some time ago formulated the dictum that one never knows when, where, or how suppuration of the middle ear will end. I think that statement was too broad, because he should have made some classification of the suppuration as to the site of perforation, the character of the discharge, etc. A perforation that involves the marginal posterior portion of the drum membrane is always likely to be accompanied by bone disease, and of course the most serious form, as I have already mentioned, is where the perforation involves the attic and particularly the posterior quadrant.

In regard to the odor: It should be borne in mind that odor is often the result of lack of cleanliness. It is only when the odor persists after thorough cleansing that it indicates disease of the bone.

Tuberculosis of the middle ear is more common than we are apt to think. It is characterized in the main by a painless course and frequently by early bone complications, and there is apt to be more than one perforation in the drum membrane. The tubercle bacillus is frequently difficult to find, often it is not found in the discharge from the ear, but the clinical symptoms are generally sufficiently characteristic to warrant that diagnosis.

A word or two about the roentgen-ray: It does not seem to me that the x-ray is of the same value in chronic suppurations of the middle ear as it is in the acute forms. In the vast majority of cases, at least those with which I am familiar, the report of the roentgenologist shows sclerosis of the mastoid cells. While I do not wish for a moment to discredit the value of the roentgenologist's report, as a matter of fact we already know there is sclerosis of the mastoid cells, because there is always more compact bone in cases of long standing suppuration of the middle ear. So it does not add very much to our knowledge. I do not believe the roentgen-ray enables us to differentiate between cholesteatoma of the mastoid antrum and sclerosis.

I had the pleasure of seeing a case in consultation some years ago, an operative case in which a large cholesteatoma was found, but my impression is that the roentgen-ray report merely showed sclerosis. Operation disclosed complete obliteration of the mastoid cells by cholesteatoma. If the roentgen-ray could make that distinction for us it would be a very valuable asset in the diagnosis.

The essayist might have elaborated a little more on the medical treatment of chronic middle ear suppuration. He passed almost immediately to the surgical treatment. A certain proportion of cases, particularly those in which there is good drainage, and where there is no

existing bone disease, are cured by persistent cleanliness and the use of various drums.

Charles K. Beck: I enjoyed the paper very much. Chronic middle ear suppuration is of great importance to the whole profession, not to those of us only who are specialists. These cases are frequently passed over too lightly, especially by the family physician and the patients themselves, whereas we know they are serious and attended by a great deal of danger.

An important point has been emphasized by Dr. Dabney and was also mentioned by the essayist, that is the location of the perforation; but the patient and the family physician do not know of this fact, and so long as no harm is apparently being done they are not inclined to look upon it as being serious. All these patients should be carefully examined and repeatedly if necessary. In the majority of cases where pain persists for quite a long time either the perforation in the drum is not sufficient for good drainage, or there has been lack of cleanliness as Dr. Dabney has mentioned and the ear has not been kept as clean and open as it should be, or there has been involvement of structures beyond the middle ear, the mastoid or attic. When the disease has extended there it should be dealt with in a radical way, so as to remove the danger that is hanging over the patient like the sword of Damocles.

Edmond D. Wells: I have enjoyed Dr. Richeyson's paper, but do not believe everything he had to say. I believe it is rather rare that a patient with chronic otitis media need undergo a radical operation. Oftentimes when patients are subjected to radical mastoidectomy, we have "fallen down" on the diagnosis, and I believe this frequently happens in chronic suppurations of the middle ear.

One point upon which I wish Dr. Dabney had spoken is the advisability of irrigating the ear. I think irrigation of the ear does a great deal of harm, and if a man understands the anatomy of the ear I believe he will agree with me.

Another important point in making the examination is to see that drainage and ventilation are free. If there is any obstruction to drainage and ventilation the canal should be cleansed by using oil and alcohol with menthol. If that is done and the strength of the alcohol gradually increased, good drainage is secured, ventilation is improved, and possibly a mastoid operation can thus be avoided.

Oscar O. Miller: I would like to ask Dr. Richeyson whether he has had any experience in treating chronic otitis media with the Kromayer lamp? At Waverly Hills we see quite a number of chronic discharging ears in adults that do not yield to the ordinary methods of treatment. We have had two patients recover where we were able to reflect sunlight into the ear. I have wondered whether the Kromayer light as been

used for this purpose and with what results.

Hugh H. Richeson (in closing): As to the value of the roentgen-ray in chronic middle ear suppurations: The roentgenologist usually reports sclerosis of the mastoid, but sometimes he says there is a cavity far posteriorly as an air space is noted. I recall that Dr. Bass operated upon a patient a few months ago where the x-ray showed a dark shadow. Operation disclosed a cavity which had become walled off.

So far as cholesteatoma is concerned: I am not an expert in reading roentgenographic films, but I suppose cholesteatoma would show as a cavity.

No doubt many patients with chronic otitis media are operated upon that should not be, and maybe some should that are not. As Dr. Dabney has said, the site of the perforation must be determined in estimating the prognosis. Not infrequently patients are admitted to the hospital with a chronic discharging ear, with the neck and back stiff, with fever, and operation discloses meningitis. When sinus thrombosis develops there is not much chance of saving life.

As to irrigating the ear: If there is a good sized opening in the drum, especially in the lower quadrant, and the canal can be kept clean without irrigation, that is probably the best plan of management. If the patient is a child and difficulty is experienced in keeping the canal clean, irrigation with boric acid solution is advisable. If there is a narrow perforation in the tympanum and the mastoid is filled with debris, it is hardly advisable to irrigate as no benefit is likely to be accomplished. It would be better in such cases to perform mastoidectomy.

I have never used the Kromayer lamp in the manner suggested by Dr. Miller, but believe it would be of benefit.

Bleeding Nipple.—Kopp analyzes twenty-two cases of bleeding nipple. Pathologic examination was made in twenty, and showed that in nine the cause was intracanalicular papilloma, in nine others chronic cystic mastitis, in one a combination of the two, and in one precarcinoma. In sixteen the secretion from the nipple was the only symptom. In nearly all it resembled venous blood in appearance; in some the discharge had at first been serous, and had gradually become bloody. He does not approve of conservative treatment, but he does not believe that the typical radical operation, as for carcinoma, is necessary, unless, of course, carcinoma is suspected. In younger women, if swelling is absent, he exposes the posterior surface of the mammary gland by a latero-inferior incision, and, according to the information obtained by inspection and palpation, performs either partial extirpation or subcutaneous enucleation of the gland. In older patients, he advises removal of the entire breast.

A MASTOID CASE.*

By WALTER DEAN, M. D., Louisville.

As an introduction to this case report, let me tell you that it is the consensus of opinion of Kerrison, Gleason and Philips of this country, Dan McKenzie of London, and Alexander of Vienna, that many or most cases of acute suppurative mastoiditis will get well with good ear function without operative invasion of the mastoid, if intelligent, diligent care is used in the conservative treatment.

This presupposes that the drum has either opened spontaneously or has been incised; that the opening is at all times sufficiently patent and that the force from behind and our suction from the front succeeds in keeping active and sufficient drainage from the mastoid cells into the antrum, through the aditus into the tympanic cavity, through the perforation into the canal and the outside world.

If granulations, polypi or inflammatory swelling any place along the route stops the flow, operation to the mastoid is imperative. If the resistance of the patient is lowered by fulminating scarlatina, measles, diphtheria or influenza to the point that further toxemia is unbearable, mastoid drainage must be improved by mastoidectomy.

It is interesting to note that we often find one, two or three plus albumin in our suppurative mastoid cases. The pathology in the mastoid cells themselves is usually the deciding point.

I believe that pus from the suppurative middle ear usually enters the antrum and the contiguous mastoid cells. This infection is usually wider than it is deep. The mucous membrane is hyperaemic and there is round cell infiltration. Pus is thrown off in quantities. If the infection is not too virulent, the resistance too low, or the mechanics of the mastoid too defective, these cases will drain themselves clean through the middle ear. Even if limited caries occur, resolution can take place spontaneously.

Necrosis and osteomyelitis, of course, demand mastoidectomy. Middle ear abscess causes higher temperature than uncomplicated acute mastoiditis. If the temperature remains high five or six days after the drum is correctly opened, either there is a complicated mastoid, pneumonia, nephritis, or some other remote complication. In uncomplicated mastoiditis the temperature does not exceed 100° to 101° F. Prolonged pain, when intense over the mastoid region, justifies mastoidectomy. Insomnia is a grave symptom too. Tenderness prolonged over one week after the drum opens is a serious symptom. Edema over the mastoid region is conclusive indication that con-

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servatism is no longer conservative. Edema of the posterior-superior canal wall is pathognomonic of serious mastoiditis.

To recapitulate: when the following symptoms persist over a week it is wise and often imperative to open the mastoid. These symptoms are temperature over 101° F., intense pain, tenderness and edema of the canal or mastoid region. The lateral sinus may be infected early either from its contributory veins or by direct invasion. Septic temperature indicates the condition, and leucocytosis proves it.

Mastoidectomy only has a mortality of one or two percent in trained hands. Why it is so feared, I do not know. We are often called upon to treat our mastoiditis cases conservatively longer than we wish to. Some of us being ever on the alert and anxious lest a complication arise, still treat our cases conservatively longer than we used to.

The following is a case in point. Miss E. came to me on Jan. 12, 1927, with an unruptured middle ear abscess and an abscess of the right maxillary antrum, both complications of influenza. I incised the drum under local anesthesia and punctured and irrigated the antrum. Temperature was then 100° F. The next day temperature was 100.6° F. The ear was draining serosanguineous exudate profusely. I irrigated the antrum. Tenderness over the mastoid antrum was intense. Pain was severe, temperature 100.2°. Patient reported a chill followed by sweats in the night. The leucocyte count was 10,000. This excluded infection of the vein as did the absence of septic temperature.

As the mastoid tenderness was intense on the fifth day, the mastoid was x-rayed. Report showed the mastoid cells on this side were blurred; that there was evidence of increased density of the bone, and that some cell wall destruction had taken place. I decided to continue suction to the ear and catheterization of the Eustachian tube, giving the middle ear two sources of drainage. At the end of two weeks the temperature still ranged between 100 and 101, tenderness was marked but the discharge, though copious, was constant and pain had almost subsided. On the nineteenth day, temperature had gradually subsided to 99°. Tenderness had almost disappeared. The discharge had changed from mucopurulent to almost pure mucus. On the twenty-fifth day the temperature was normal, no tenderness. The perforation persisted but suction withdrew no exudate and catheterization of the tube did not either. Five days after, the perforation closed and the hearing was almost normal. A week later the hearing was 20-20 voice, the drum looked catarrhal but the sear in the drum could not be seen.

These are sick looking patients. I do not seem to have conveyed in the foregoing how tremendous this patient's discharge was, how tender her mastoid was or how much spontaneous pain she suffered. She is one of many such cases I have had the pleasure of carrying through to resolution by early myringotomy, suction, and meticulous care of the external canal.

The responsibility is very heavy.

AN UNUSUAL CASE OF TRANSVERSE POSITION.*

By W. T. McCONNELL, M. D., Louisville.

Mrs. Lydia Boyd, patient, was admitted to white obstetrical ward of the Louisville City Hospital at 1:15 a. m., October 15, 1926. She had not been seen by any of our staff before admittance to the hospital. She was a well nourished white woman, forty years old, weighing about 190 pounds. Gave a history of having given birth to ten normal children, all living at the present time. When admitted she was passing large clots of blood and was very weak. Had been in labor about one week, passing considerable blood all this time. Pulse was thready and rapid; volume so poor that pulse could only be felt with difficulty.

Examination showed an arm protruding from the vagina. No fetal heart could be heard. Pains had ceased several hours previously, but uterus felt hard and firm.

Morphine (gr. 1-4) was given upon admittance. Patient was taken to the delivery room at 2 a. m. and given 1,750 c.c. normal saline by hypodermoclysis. Caffein and sodium benzoate and adrenalin were administered hypodermically.

Under ether anesthesia a manual examination showed child in a transverse position, tightly locked in the uterus, cord non-pulsating, the placenta completely separated from the uterine wall, and the uterus firmly contracted about the body of the child.

A podalic version was accomplished with considerable difficulty, and breech extraction begun. When the shoulders and arms had been delivered, it was apparent that the head was firmly held in the body of the uterus by a tonic contraction of the lower segment of the uterine muscle. The placenta and membranes had been expelled with the torso. Moderate traction upon the body of the child was made, whereupon the uterus, tubes and ovaries, with the head still in the uterus, tore through the vaginal vault, and were extruded en masse from the vagina. With all the above named viscera lying completely exposed upon the table, attached only by the broad ligaments on either side, it was still impossible to

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extract the head from the uterus. A suboccipital craniotomy was done and another unsuccessful attempt made to free the head. The lower segment of the uterine muscle was then divided and the head released.

Long clamps were then applied to the broad ligaments just distal to the tubes and ovaries and the uterus and adnexa removed. The stumps of the broad ligaments were then tied off with a continuous suture, then sutured firmly together and returned to the abdominal cavity.

The vaginal tear was closed with three sections of continuous suture, a cigarette drain being used in the wound. Chromic catgut number two was used in the entire operation. The suturing of the vaginal wound was very difficult because of the necrotic condition of the tissues. The vaginal wall was so friable that it could not be drawn down to the vulvar opening, and the work had to be done inside the vagina. The tear extended for about 20 cm. beginning in the lateral wall, extending through the vault, and down into the opposite lateral wall.

The patient's condition during the entire procedure was very grave, especially in the latter part, when she went into profound shock. The Trendelenberg position, caffeine, strychnine, adrenalin, pituitrin, and saline were used as restoratives. Before she was removed from the table a transfusion of 500 cc. of citrated blood from her husband was given, it being necessary to cut into her vein. By the time she was put to bed she had regained consciousness and her general condition was greatly improved. Her feet were elevated for about twenty-four hours, after which she was put in the Fowler position.

She made an uneventful recovery until the tenth day when vaginal examination showed a small recto-vaginal fistula; although no fecal material had passed from the vagina there had been a small amount of foul discharge. Installations of balsam peru and castor oil were then given daily into the rectum and vagina and on the seventeenth day the fistula was found to have disappeared completely.

During the entire convalescence her temperature ran from normal to 100° F., only one time going to 101°. She had no abdominal distention or tenderness, and her bowels and kidneys acted normally throughout. She was discharged from the hospital on the seventeenth day, November the first, 1926, in splendid condition; the vaginal wound had completely healed.

The accident that happened during extraction was evidently due to the extensive pressure necrosis in the vaginal vault, produced by such exceedingly prolonged labor.

DISCUSSION

Edward Speidel: Dr. McConnell is to be congratulated on the result secured in the case reported. This is a sample of the desperate cases that are sometimes admitted to the Louisville City Hospital, and we are often surprised that the patients recover. Of course this was an extreme case. Transverse presentations occur most frequently in multipara, and especially in women who have given birth to a number of children in quick succession. This woman was the mother of ten children, this being the eleventh. She was fortunate in having a roomy pelvis and a roomy vagina through which manipulations could be performed more readily than otherwise would have been possible. Had the patient's condition permitted, the proper procedure in this case would have been vaginal Caesarean section. It is not an easy matter to perform craniotomy on the after coming head in an extreme case of this kind. The tissues are edematous and injury might be done to the intestine, urinary bladder, vaginal wall, etc. Moreover, application of the cranioclast in such a case is an exceedingly difficult proposition.

Dr. McConnell is to be congratulated that his patient recovered after all this manipulation.

Harry A. Davidson: There is not much to be added to what has already been said about the case reported. The most remarkable feature about the case is that the patient did not have septicemia after all the manipulations described. It is difficult to understand how the woman could be in labor for a week, and probably she had been examined a number of times before admission to the hospital, and escape septic infection.

The woman made a remarkable recovery and Dr. McConnell is to be congratulated on his management of the case.

W. T. McConnell (in closing): In regard to vaginal Caesarean section in the case reported: After the uterus escaped and was lying on the table, of course it was outside the vagina, and the operative procedure adopted was the only one to be considered. Traction made upon the body of the child was very slight; the vaginal tissues were very necrotic and there was little resistance. After the uterus and adnexa were extruded of course vaginal Caesarean section was out of the question.

As to the likelihood of sepsis in this case: I think if the uterus had been returned to the abdominal cavity the woman without doubt would have died from sepsis. The reason she did not have infection is because the uterus and adnexa were removed. It is quite probably many vaginal examinations had been made before the patient was admitted to the hospital. According to the history one arm of the child had been in the vagina for about a week before the woman came to the hospital.

I thank the gentlemen for their discussion.

EMPHYEMA: REPORT OF FIVE CASES TREATED BY A SIMPLE BUT EFFICIENT METHOD.*

By E. E. BUTLER, M. D., Louisville.

In reporting these cases it is not my intention to claim anything new or to attempt to show that the method used is superior to other methods. When the Chairman of the Committee on Case Reports and Specimens telephoned me recently, and asked that I present a case report to this society, I thought of these cases and agreed to present them.

In the cases I am reporting the results obtained were excellent, while the operative procedure was very simple and did not require surgical experience. Prior to the use of this method it was my custom to refer cases of empyema to a surgeon for rib resection and drainage. The following case reports will show how I happened to make use of this method.

Case No. 1.—Wm. K., aged 19 years, white, male, unmarried. I was called to see this patient at about 3 a. m. January 23rd, 1922. The history obtained was as follows: Cold of two to three days duration, severe chill followed by a rise in temperature to 102.6°.

Examination of patient at bedside: pulse 130, temperature 102.6°, respiratory rate 28, flushed face, anxious expression, dyspnea, dry harrassing cough. Physical findings: slight dullness over middle and lower portions of right lung anteriorly and posteriorly. Faint breath sounds and an occasional fine rale over the same area. Abdomen not remarkable. The temperature remained high (102.6 to 104°) for eight or nine days when it became lower ranging from 100.2 to 102 degrees. The pulse and respiratory rates increased about the tenth day and patient began to have marked sweats. Loss of weight and strength was rapid and it became evident that some serious complication had developed. After careful physical examinations I decided, on the fifteenth day, that empyema was the complication. I suggested removal to a hospital which was refused by the patient. He was so very weak that he seemed to have lost all hopes. Consent was obtained to an exploratory puncture. This was made under novocain anesthesia with a 20 cc. luer syringe and large bore needle. The site of puncture was between the eighth and ninth ribs below the angle of the scapula on the right side posteriorly and was made without apparent pain to the patient. A moderately thin, pinkish gray fluid was obtained.

A surgeon was called in consultation and it was decided to attempt to insert a rubber

tube for drainage, but not to attempt a rib resection on account of the unfavorable condition of the patient. A rubber tube was inserted, under local anesthesia, but drainage failed to take place and after several hours I removed the tube. It was then that I decided to insert a trocar and introduce a small male catheter. The lumen of the outer end of the catheter is kept clamped in order to prevent collapse of the lung. A 50 cc. luer syringe was attached to the outer end of the catheter, clamp removed and pus withdrawn. At the first drainage about 500 cc. of pus was withdrawn. The temperature and sweats promptly subsided. The drainage was repeated daily and after a week's time patient was very greatly improved. Temperature and sweats had ceased and he had gained in strength. The pulse and respiratory rates became lower.

After about two weeks time I decided to introduce sterile normal salt solution through the tube in order to irrigate the cavity. The pus was withdrawn after which an equal amount of salt solution was introduced. This procedure was carried out several times until the salt solution returned clear. On several occasions a weak solution of dibromine was used instead of the salt solution. The patient rapidly gained in strength and after six weeks the drainage had almost ceased. About this time the tube was accidentally removed while the patient slept. I decided not to reinsert the tube thinking it unnecessary. However, after five or six days it became evident that the tube would have to be reinserted. This was done and the pus evacuated and cavity irrigated every other day for two weeks. At the end of this time drainage was negligible and it was with difficulty that the fluid was forced into the cavity. The tube was withdrawn and the site of the puncture healed in a few days. For several months afterward the right side of the chest was noticeably flattened, but this defect has since vanished. Patients' weight before illness was 138 pounds, during convalescence, 98 pounds, and at present 145 pounds.

Case No. 2.—Mrs. E. A. H., white, aged 42, mother of two grown daughters. Had been ill four to five weeks and under care of another physician. Her husband came to my office and informed me that he had been referred by one of my patients who had a similar condition to that of his wife's. The patient who referred this man to me was the young man in case No. 1 who was then at work in a Quaker Maid store. The husband stated that the physician attending his wife had decided there was pus in the pleural cavity, and had made an exploratory puncture, but had failed to locate the pus cavity. He further stated that the physician desired to

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remove his wife to a hospital where an x-ray examination could be made to determine the exact location of the pus and where an operation could be performed. This man was financially unable to send his wife to a private hospital and he either had to send her to the City Hospital or to employ another physician.

Examination of the patient revealed a typical case of empyema on the left side posteriorly. Without difficulty exploratory puncture revealed the pus cavity and it was evacuated by the method previously described. This patient did not apparently have a severe infection for she was not in a very weakened condition when I saw her. She made a rapid recovery, drainage ceasing in three weeks.

Case No. 3.—J. S., aged 4 years, white, female. Lobar pneumonia entire right lung with crisis on fifth day. Elevation of temperature accompanied by sweats began about the eighth day. In this case it appeared that an extension of the pneumonia had taken place in the left lung. However, there were no physical findings to confirm this suspicion. X-ray examination revealed evidence of fluid at base of right lung which was confirmed by exploratory puncture. This patient made an uneventful recovery in six weeks.

Case No. 4.—J. C. B., white, male, aged 48 years. Influenza lasting about six to eight days after which patient was up about the house for a few days when he began to have dyspnea. Temperature ranged from 99.2 to 102.6 degrees, chilly sensations and profuse sweating at intervals.

Physical findings : Excursion of right side of thoracic wall somewhat limited, impaired resonance over upper portion of right side anteriorly and posteriorly while dullness was present over lower half of right lung anteriorly and posteriorly. Absence of breath sounds over lower portion of right lung anteriorly and posteriorly. Blood count: Leucocytes per cu. mm., 26200; polymorphonuclear leucocytes 88%; lymphocytes 12%. Urine examination: specific gravity, 1026; albumin present. Microscopical report shows many fine granular casts. This patient made an excellent recovery following catheter drainage.

Case No. 5.—Master T., white, age 3 years. Measles in April, 1926, duration two weeks. Child did not seem to gain in strength after this illness but continued to have a cough for many weeks. He was again ill with symptoms of bronchitis on June 10th, 1926. Child continued to have fever and cough. On June 19th I had his mother bring him to my office where under the fluoroscope I determined that the left pleural cavity contained fluid. It was not my opinion that this fluid was purulent and I strapped the left side with adhesive in

the hope of getting absorption. Slight improvement was noted for a few days after which symptoms became more pronounced. Fluoroscopic examination was repeated on July 6th, and this time revealed the lung almost completely collapsed by the pressure of the fluid. On the same day I did a paracentesis and withdrew about 150-200 cc. thin seropurulent fluid. This puncture was made on the left side posteriorly just below the angle of the scapula. In this case drainage was continued three weeks when the catheter was withdrawn. Fluoroscopic examination four weeks later showed the lung fields to be entirely clear.

DISCUSSION

D. P. Hall: Dr. Butler is to be congratulated on the splendid results he secured in the five cases reported. He was lucky in one way, i. e., that he did not have more virulent infection.

A method similar to the one described by Dr. Butler was devised by Dr. Arvine Mazingo, of Indianapolis, Indiana, and reported in 1919. It was employed extensively during the war in empyema cases following pneumonia. The method was then described as "Mazingo's closed method." I believe he has since made some improvements in the procedure, one is the two-way catheter, which washes in one way and out the other. In cases of virulent infection following pneumonia, where the patients are bed-ridden and cannot be removed to the hospital, the method suggested by Dr. Butler is probably the best plan of management.

If I am not mistaken Mazingo irrigated the pleural cavity every three or four hours with Dakin's solution, claiming this dissolved the flocculent material found in some of these cases of empyema. That is most likely true, because we know in some of them tube drainage is unsatisfactory because the tube becomes obstructed, and a rib must be resected to afford proper drainage. I think rib resection is necessary where the cavity cannot be irrigated often enough.

I appreciate Dr. Butler's paper.

J. B. Lukins: I want to congratulate Dr. Butler on his excellent results, and also to recommend the method he has described. Those of you who followed the literature just after the war will remember the extensive discussion which took place about who originated the closed methods of treating empyema. Some of the higher army officers claimed to have done so. Dr. Mazingo came here and read a paper reporting the most remarkable results from this method. Since that time I have never resected a rib in empyema, but have used this method in every case of acute infection. In chronic cases of long standing, I still think rib resection is the best method of procedure. Good results have been obtained by the closed method.

There is only one feature concerning the technique employed by Dr. Butler upon which I wish to comment: I doubt if irrigation adds anything worth while to the treatment. If the drainage tube is kept open I believe all these cases in children will get well. I have had two or three such cases in children during the past winter. In one of them the tube remained in situ about six weeks. After a few days of free drainage the temperature usually recedes to 99° F. and then to normal, and the child makes an uninterrupted recovery. In some cases I even believe irrigation does harm in the infected cavity, and it is quite generally conceded now that irrigation is practically useless it matters not whether Dakin's solution or some other solution is employed. I have never seen any benefit from it either in the army or since I came home. Like many others I have used Dakin's solution and ordinary salt solution, but in many cases I believe irrigation is a disturbing rather than a beneficial factor.

One drawback to tube drainage has been that in nearly every case there is some seepage of pus around the tube which saturates the gauze and necessitates changing it several times a day. This feature can be easily overcome by folding the gauze and punching a hole through it with the trocar instead of cutting the hole with scissors. By this plan the gauze fits closely around the tube and in some cases the gauze does not have to be changed for several days.

I again wish to congratulate Dr. Butler on his most excellent results.

A. R. Bizot: If I am not mistaken we had the pleasure of hearing Dr. Mozingo read a paper on empyema before this society and he showed numerous lantern slides to illustrate his remarks. His method has proven quite satisfactory and some of his results have been excellent.

I think more than fifty per cent of the cases of empyema are tuberculous in origin, and if the patients are treated as if they were actually tubercular they should return for further observation.

I quite agree with Dr. Lukins that irrigation of the cavity is unnecessary if pus flows freely from the catheter. If the end of the catheter is left open collapse of the cavity is apt to occur. Mozingo always applied a hemostat to the catheter. He irrigated the cavity with Dakin's solution every four hours. Ordinarily saline solution probably does just as well as Dakin's solution where irrigation becomes necessary. Dibromine T. 1 to 5000 or even 1 to 10,000 may be very irritating to the skin, sometimes producing a papillary eruption, and may cause pleural pain when used for irrigation. I believe the pleural cavity should not be irrigated unless the pus is very thick. In some cases I have seen the pus so thick that it would not flow through a canula. In such cases irrigation is absolutely essential. When the catheter is removed one must

be certain all pus has been withdrawn from the cavity. The x-ray is exceptionally helpful for this determination.

It must be remembered that paracentesis of the pleural cavity is not without danger. I have seen two patients die after this seemingly simple procedure.

E. E. Butler (in closing): I thank the gentlemen for their discussion. My object in presenting the paper was merely to relate my experience in the few cases of empyema that I have treated by the method described.

I do not know that irrigation is of any particular value. I do know, however, that in the last case there was an accumulation of fibrinous material in the pleural cavity which obstructed drainage, and the introduction of 20 to 30 cc. of saline solution dissolved this material so it could be withdrawn.

In the first case reported I used dibromide tablets in 1-10,000 solution. That was about the time the drug was introduced by Parke Davis & Co. and was in the experimental stage. Their representative came to the office one day and told me the value of it and left a sample. That is how I happened to use it. In the third case I used mercurochrome solution, but do not know whether it really did any good.

The method I use is known as the closed catheter method. The side of the chest is strapped with adhesive plaster and the catheter is kept closed. In a few cases I have tied the catheter with a piece of tape. If the end of the catheter is left open there is likely to be collapse of the lung. Pus is withdrawn from the cavity at intervals as required. In the last case (the child exhibited) pus drained around the catheter into the gauze for a time. On one occasion the catheter was extruded, but fortunately I was able to replace it through the original tract. At another time the catheter could not be replaced and I had to reinsert it in another location a few centimeters from the original opening. Of course, it is best to keep the catheter in place where this is possible. I could look at this child under the fluoroscope and see the exact location of the catheter each time. If the catheter is improperly placed drainage will be imperfect. It must be inserted to a point low enough so the pus will drain.

The main features are to watch the patient carefully, withdrawing the pus with sufficient frequency; to watch the catheter and keep it clean; to insert the catheter at a point sufficiently low to completely drain the cavity.

I do not know just how I happened to adopt this method of treating empyema. I did not hear the paper of Dr. Mozingo to which reference has been made in the discussion, but about that time I read something about the method in the literature and concluded to try it at first opportunity. The results secured have been satisfactory.

POSITIVE URINARY FEHLINGS TESTS IN CONNECTION WITH OUR OBSTET- RICAL CASES.*

By CHAS. E. GAUPIN, M. D., Louisville.

The presence of sugar in the urine of the pregnant woman should never be considered as probably of innocent origin or as merely "milk sugar," until by careful chemical tests of the urine, and blood if necessary, true diabetes can be excluded. In the great majority of instances, fortunately, it is of renal or innocent origin and not a true diabetes, but nevertheless we must eliminate the latter condition, because, when present in the pregnant woman, it is often of a very serious consequence to both mother and child if untreated.

The finding of a positive urinary Fehling's test is found in the following conditions.

1. Hyperfunction of the breasts—lactosuria.
2. Low renal sugar threshold or abnormal permeability of the kidneys to sugar.
3. Lessened sugar tolerance.
4. Hepatic insufficiency.
5. Diabetes mellitus.

Some authorities classify a disturbance of the endocrine system as another cause. I have had no experience with this condition, hence can only mention it, to dismiss it.

Sugar is frequently found in the urine of lactating women, post-partem especially, and is present in the form of lactose. It is due to the absorption of milk sugar from the functioning breasts. It is not an unfavorable sign, unless very large in amount and attended by symptoms of disturbed nutrition, such as loss of weight, weakness and anemia. A nursing woman is apt to develop lactosuria if she eats a large amount of sugar.

Lactose yields a positive Fehling's test but differs from glucose in that it does not ferment. Like glucose under the polariscope it is dextro-rotatory.

Lactose is frequently found in the urine of pregnant women after the 30th week. DeLee states that it is found in very minute traces in around 45% of cases. The diagnosis of lactosuria can be made by the ordinary yeast fermentation test, which is negative to lactose but positive to glucose. A blood sugar determination is not necessary in these cases.

Levulose or fruit sugar is only rarely found present in the urine of our obstetrical cases. It may have no pathological significance or it may be an index of hepatic insufficiency. One case of levulosuria came under my observation in a primipara who was in very good physical condition. This was very

easily proven levulose by the polariscope, the rotation of the plane being to the left.

This condition disappeared after 10 days and the patient presented no further pathology. It may be well to observe these cases oftener than is our usual custom, not only more frequent urinalysis but also blood pressure readings. This condition is said at times to be associated with hepatic inefficiency.

Eclampsia bears a like relation, hence it may be a forerunner or warning sign of impending toxemia and demands that we at least give these patients more than ordinary care and attention.

Levulose may also be found along with glucose, when the latter sugar is present in the urine. I have seen only one case of levulosuria.

Urinalysis may reveal the presence of galactose, which sugar is the result of an hydrolysis of lactose. When present it cannot by ordinary methods be differentiated from glucose because it ferments and is dextro-rotary. Here it is usually necessary to do a blood sugar determination to exclude a true hyperglycemia. In the ordinary run of our urine examination we would take it for glucose, and without a very detailed chemical urinalysis, would pass by undetermined as galactose. Lactose is most likely responsible for its presence.

We now come to the most important sugar found in urine, namely glucose or dextrose. From a clinical standpoint it is the one that concerns us most. It is found in the following conditions:

1. Low renal threshold.
2. Lessened sugar tolerance.
3. True diabetes.

Glucose gives a positive Fehling's, ferments with yeast and is dextro-rotatory.

Renal diabetes, as those cases coming under the heading of a low renal threshold as sometimes called, are due to an undue permeability of the kidneys to sugar and are independent of any increase in blood sugar. The normal blood sugar, which is from .08 to .12 per cent or from 80 to 120 milligrams per 100 cc. of blood, is normal in this type of glycosuria. These patients are usually in good health and the sugar is discovered only by our routine urinalyses. Some cases are uninfluenced by diet, but others on a low sugar and carbohydrate diet, the sugar disappears from the urine. It is perhaps difficult to differentiate between low sugar threshold and alimentary glycosuria. The latter cases always subside on proper diet, while in the former diet may have no influence. Many authorities claim these patients should be considered as diabetic and treated accordingly. Statistics seem to bear out their contention

*Read before the Jefferson County Medical Society.

that later on they become true diabetics.

A sugar tolerance test should be done if in doubt as to the real condition. At the beginning of the test the blood sugar should be determined. From 50 to 100 gms. of glucose can then be given on a fasting stomach or a meal rich in carbohydrates taken and 2 hours later the blood drawn from a vein for a blood sugar determination. If over 160 milligrams per 100 cc. of blood is present there exists, most likely, a true diabetes.

These patients should most certainly be put on a low carbohydrate and sugar free diet so if possible to clear the urine of sugar before time of delivery. I do not believe these patients require insulin because of a normal blood sugar; in fact, insulin may be dangerous, as it would cause a hypo-glycemia.

In true diabetes sterility is common, hence fortunately we do not see many of these cases. In one series of 114 cases of diabetes in women in the child-bearing period, there were only 7 pregnancies. Abortion and premature labor occur in one-third of these cases. In untreated cases, the child, if the case goes to full term, dies before, during or shortly after labor, the mortality being at about 66%. The infant may show glycosuria shortly after birth. Diabetes produces an atrophy of the ovaries and uterus which explains the low pregnancy rate.

Pregnancy also in turn has a bad effect on the course of diabetes. Since the carbohydrate control of the liver and pancreas is at fault, it is only natural that the extra strain on the liver in pregnancy would overburden this organ to a serious degree, so that its function would be much below normal.

Unless the proper treatment is instituted, malnutrition and grave nervous symptoms intervene, with acidosis and final coma. Coma occurs in 30% of untreated cases and is nearly always fatal. Coma usually comes on during labor or just after it. In severe cases forced or induced labor has a very bad effect, even worse than a surgical operation, and collapse, coma and sudden death are not uncommon.

The symptoms of excessive thirst, malnutrition, polyuria are always viewed with suspicion as to the existence of a true diabetes when associated with glycosuria. The real proof is in a blood sugar test, i. e., the finding of a hyperglycemia. Acetone and diacetic acid are still further proofs of this condition.

Treatment resolves itself into but a few words. Diet, insulin, and alkalies. Diet requires but to mention it to dismiss it in connection with this paper, as you are all familiar with it.

Insulin offers us a great remedy in dia-

betes in pregnancy. Many mothers and babies are now saved that were formerly lost. John Henry in the *Journal of Gynecology and Obstetrics* of April, 1926, writes the following:

(1) "When glycosuria is discovered during pregnancy, it may be, and often is, a sign of the initiation of the diabetic status, when the earliest changes—the hydropic degeneration of the beta cells of the islands of Langerhans—are taking place. If the condition is cared for at this stage, the patient stands a good chance of recovery, of a restoration of the islands to a normal or nearly normal status, as Copp and Barelay have shown by their work with dogs at the Physiatrie Institute.

(2) These investigators undertook to discover the conditions under which the cells of the islands of Langerhans would regenerate. To this end they ablated about four-fifths of the pancreas in each of a group of dogs and let the wound heal, thus rendering the dogs potentially diabetic. As long as these dogs were kept on a regulated diet, there was sugar in the urine, but the blood sugar level remained normal. But when these potentially diabetic dogs were overfed, the blood sugar increased and the dogs began to excrete large quantities of sugar in the urine and to show the signs of general physical failure, such as are exhibited by uncontrolled diabetic patients. After the animals had been subjected to this overfeeding for from 7 to 9 weeks, the authors excised a piece of the pancreas in which they were able to demonstrate the hydropic degeneration of the beta cells.

The dogs were then placed on proper diet and insulin was administered. The urine promptly became sugar free and the blood sugar normal. After they had been subjected to this controlled regimen for from 7 to 9 weeks, again a portion of the pancreas was excised and examined and the cells of the islands of Langerhans were found to be restored.

Those findings provide a concrete demonstration of what has been repeatedly seen clinically; that is, that when diabetes is treated early in its development, there is a good chance of restoration of the insulogenic function; but if the treatment is postponed until the islands are gone—fibrosed—nothing will bring around their regeneration."

CONCLUSIONS.

Those cases presenting a positive urinary Fehling's test should be put through the following routine:

1. Fermentation tests. If negative it is lactose, if positive it is either glucose, levulose or galactose.

2. Use polariscope, if possible, when fer-

mentation test is positive. This will show if it is levulose. No further testing is then necessary.

3. If the sugar is fermentable and dextro-rotatory, then a blood sugar determination should be done.

4. If blood sugar is, on fasting stomach, over 120 milligrams per 100 cc. of blood, then a true diabetes exists.

5. A sugar tolerance test, as described previously in this paper, may be done in doubtful, or borderline cases.

6. If true diabetes is present, a 24 hour specimen of urine should be examined for the percentage of sugar and the total grams of glucose excreted in 24 hours calculated.

7. Insulin should be given in the ratio of 1 unit to each 2 grams of sugar excreted in 24 hours.

DISCUSSION.

Edward Speidel: As mentioned by the essayist in his paper, true diabetes in pregnancy is not only very rare, but pregnancy in true diabetes is equally rare. I have never had a case of true diabetes in pregnancy in my experience of thirty-two years. I had one patient who showed some symptoms of diabetes, but did not show any increase in blood sugar, and responded very well to dietetic treatment.

The important thing to obstetricians in bringing a paper of this kind before the society is that we may get the views of internists and physiologists on certain points connected with diabetes. First of all it would appear that if, in the prenatal care and in the history taking, the obstetrician finds no evidence of a previously existing diabetes, there is little reason to suspect the disease will develop during the period of gestation. I was sorry that in the experiments on dogs where three-fourths of the pancreas was removed that some female dogs were not used and then impregnated to see whether the added metabolic strain of pregnancy in such a devitalized animal would produce diabetes. In other words, the question arises if the patient does not have diabetes, as shown by the history taking and prenatal care, and she becomes pregnant, is it possible for such a patient to develop true diabetes during the nine months of gestation? I have never heard of such a case nor have I read of one in the literature. If this does not happen, then necessarily careful history taking would prevent the doctor or obstetrician from "slipping-up" on a true case of diabetes, and the chances are that the majority of the cases we have, showing sugar in the urine are either due to lactosuria or the other kinds of sugar in the urine that the doctor mentioned in his paper.

The observation is important that if we have a case of true diabetes in pregnancy, then the patient is in a very dangerous condition, for the

simple reason that the early nausea and toxemia of pregnancy is due to a carbohydrate deficiency, consequently in order to carry the patient through the early period of pregnancy it would be necessary to as soon as possible ascertain the carbohydrate tolerance of that patient under insulin and maintain her on the highest carbohydrate intake compatible with safety to carry her through gestation and prevent the excessive vomiting of pregnancy. The same rule holds true in greater degree during the later months of pregnancy. Restriction of carbohydrates in the later months of pregnancy will have a tendency to produce a toxemia with coma.

Fred G. Speidel: I enjoyed the paper presented by Dr. Gaupin, as he has suggested several questions for consideration. One point he made I would like to particularly mention, because I differ from him, that is the question as to whether an individual with renal glycosuria is potentially diabetic. I am under the impression that is not the case. I have had occasion in the last few years to see ten individuals with true renal diabetes, all having glucose in the urine constantly regardless of diet. Such an individual will have blood sugar well within normal limits. If he is given 100 gms. of glucose his blood sugar after one hour usually does not rise above normal, and after two hours is apt to be below the original figure. In other words, the individual not only has no pancreatic deficiency but has a remarkably good blood sugar metabolizing mechanism, and for that reason there is no reason to suspect he will ever develop true diabetes. This question has been investigated rather thoroughly, and it is apparently the policy of most of the insurance companies now to accept at the standard rate applicants with renal diabetes. I have had occasion to look into this question for several insurance companies in the past year, and in two instances they accepted at the standard rate persons with true renal diabetes, taking the position that they were no more likely to develop true diabetes mellitus than individuals who were perfectly normal. The foregoing is merely mentioned in passing and has no reference to glycosuria and pregnancy.

With reference to glycosuria, of course I am in perfect accord with all Dr. Gaupin has said. It has been my custom to omit polariscopic examination. One can usually cut the Gordian Knot after having obtained a positive Fehling's or Benedict's test without the necessity of making a polariscopic examination especially if a fermentation test is made. If there is no fermentation, we assume the presence of lactose; if there is fermentation we do a blood sugar test immediately to determine whether the individual has diabetes or not.

W. T. McConnell: I have never seen but two

cases of true diabetes complicating pregnancy, and these patients were in the Louisville City Hospital, upon whom we made use of all the methods and means of controlling the malady at our command. Both patients were seen early and kept in the hospital for many weeks; both responded beautifully to treatment and were able to take a fair amount of carbohydrates without showing any elevation above normal of the blood sugar, or sugar in the urine. By the time their babies were born they were under excellent control. One baby was born apparently normal and healthy, but died without any apparent cause within a few hours. In the other case the child was born dead,—a macerated fetus,—and yet both mothers had apparently gained complete control of the disorder. These cases show that diabetes is a very serious condition in pregnancy, and while we have very valuable means of controlling the disease so far as the mother is concerned, yet so far as the child is concerned there is still a very high mortality rate which should make us very careful in the determination of this condition.

As to whether renal glycosuria is the threshold of true diabetes in pregnancy or not, I do not believe can be stated definitely, and yet it should stimulate us to use our every effort to determine this condition when it exists. I look upon the suggestion of Dr. F. G. Speidel as very valuable in arriving at proper conclusions. Polariscopic examination is undoubtedly helpful, and I am not decrying the value of it, but in practical application the test is difficult and the instrument is not always available. The fermentation test is simple and the results are generally satisfactory. If there is fermentation a blood sugar test is made at once, and if the blood sugar is high we treat the patient as a diabetic with insulin.

Another thing that I think can help us in the determination of true diabetes in these cases is the clinical picture; the polyuria and abnormal thirst will help materially in determining true diabetes. Of course, that might not help much in the very early cases, and in these the blood sugar test is the great sheet anchor of determination.

While diabetes in pregnancy is fortunately rare, yet where it exists it is a very tragic picture and should have our most careful consideration.

Ben Carlos Frazier: In my experience it is not been uncommon to find quite a number of patients with glycemia during pregnancy, it is not unusual to find every now and then transient sugar on urinalysis. These cases generally occur in women who are heavy eaters especially of carbohydrates.

I have never seen a case of true diabetes in a pregnant woman, nor have I seen sterility which could be attributed to diabetes.

H. A. Davidson: About fifteen years ago I had a case of true diabetes in a pregnant woman. When I saw her she was about four months advanced in gestation. Of course that was before the days of insulin. The blood sugar examination was positive and the woman had all the symptoms and signs of true diabetes. Not only is that true, but the woman advanced to about seven and a half months, then went into diabetic coma, was prematurely delivered of a dead child, and the woman died also. So I do not believe there was any doubt whatever about the case being one of true diabetes. Anyone who ever had a case like that in pre-insulin days will not want to see another case of diabetes in pregnancy.

Of course these cases do happen and numbers of them have been reported throughout the country. At the A. M. A. meeting in Chicago Josline, of Boston, reported a number of cases of true diabetes in pregnancy, but said he had not so much fear of them now. He said in pre-insulin days he had the greatest fear of them, but since the discovery of insulin he had very little fear of diabetes in pregnancy, and reported a number of cases in which the women were carried to full term and were delivered of healthy children after insulin treatment. I believe it is the accepted opinion among obstetricians of the world today, that pregnant women with true diabetes can be carried to full time and be delivered of healthy babies and the women also remain healthy after insulin treatment. So insulin has been a great discovery for pregnant women with diabetes.

I. H. Sonne: About five years ago I was called to attend a woman in confinement; it was the first time I had ever seen her. I found her in labor and delivered her of a macerated fetus. I did not discover until after the delivery that she had a case of true diabetes. The treatment she received was very meager. She lived in the country and about all the treatment she had was dietetic. She was then the mother of seven living children. Fourteen months later I was again called to see the same woman also in confinement. I delivered her of a twelve pound baby that lived about ten minutes. About two years afterward I was called to see the same patient, and this time delivered her of a normal baby that is now living and the mother is also living. I presume she has now passed the menopause.

This was a case of true diabetes. At that time I was practicing in the country where women in labor do not send for the doctor until about the time delivery is expected. This patient received very little treatment and she finally "fought it out" herself.

Chas. E. Gaupin (in closing): I thank the gentlemen for their liberal discussion. Of course it is well understood that a positive Fehling's

test always means the presence of glucose in the urine. In our prenatal care it is essential to investigate the history to be sure there is no diabetes in the family. If there is a history of diabetes in the family, then it makes the likelihood much greater that the patient may have true diabetes.

There is an important differential point in some of our cases of lowered renal threshold and alimentary glycosuria. This differential point is: no matter how carefully the diet is regulated, in some cases of lowered renal threshold the patient will still have sugar in the urine, which may not be true in alimentary cases. In other words, we know it is not a case of true diabetes because the patient may be given all the starches desired and there will be no sugar in the urine. Patients with lowered renal threshold, while they have normal blood sugar, when placed on regulation diabetic diet some of them will continue to show glucose in the urine. According to the literature some of these cases are eventually determined to be true diabetes. In alimentary cases one can always regulate the sugar in the urine by proper diet, but in lowered renal threshold this is untrue. If the case is one of true lowered sugar tolerance from renal causes, one cannot keep glucose out of the urine by diet alone.

As to use of the polariscope: I use this instrument because of my connection with the University of Louisville. I taught the use of the polariscope during the time I was in charge of the microscopic work for five years. In that way I formed the habit of using the instrument and still like to employ it.

I have not had under observation any cases of true diabetes associated with pregnancy. I had one case of lowered renal threshold and the trouble it gave me stimulated me to investigate the literature of the subject. The patient was a primipara aged thirty-five years. At about the seventh month of pregnancy she had one per cent sugar in her urine. Her urinary output was increased slightly over normal and blood sugar determination made which showed 98 mg. per 100 cc. of blood proving that it was not a case of true diabetes. This patient after four weeks of careful dieting became sugar free. She was delivered in the hospital and the diet continued until labor ensued. She was in labor more than twenty-four hours owing to very slow dilatation of the cervix. At the onset of labor the fetal heart sound was distinctly heard in the left lower quadrant. I saw her late in the afternoon. The following morning the fetal heart sound could no longer be heard. We applied moderately high forceps and delivered the woman of a dead baby. The only accident was an ordinary perineal laceration. She was delivered in the hospital under as aseptic conditions as it is possible to deliver a patient. The

perineum became infected which was due to colon bacillus; she developed phlebitis of the left leg with fever and other distressing symptoms; after the phlebitis subsided she developed pyelitis. To make a long story short, I visited that woman from September until nearly Christmas before she finally recovered. This case is what stimulated me to investigate the literature on the presence of sugar in the urine during pregnancy.

ELECTRICAL CHANGES IN LIVING TISSUE, AS THE CAUSE OF DRUG ACTION.*

By R. BEUTNER, Louisville.

Nernst's theory of electrical stimulation proves that the stimulation by an electrical current is due to the change of salt concentration at a membrane or, in other words, to a change of pre-existing potential differences in tissues.

We assume that some drugs, preferably alkaloids, stimulate in a similar way. A proof for this is found by studying an artificial potential difference which—to a certain extent—resembles those which are present in tissues; this is a phase boundary potential difference at the junction of the following:

(1) Nitrobenzene 10% oleic acid

(2) NaCl slightly alkalized by the addition of soap.

If traces of an alkaloidal salt are added to the alkaline NaCl solution, the potential difference changes considerably as shown in the following table:

Alkaloid added		Amount of decrease
strychnine HCl	1:1 million	0.004 volt
or atropine sulphate	1:10,000	0.08 volt
morphine sulphate	1:10,000	0.02 volt
caffeine	1:10,000	0.004 volt
epinephrine	1:10,000	0.01 volt

This shows that the most toxic alkaloids exert the most powerful electrical action.

Substances like ether, chloroform, amyl alcohol, veronal and antipyrin, which have no physiological action in alkaloidal doses, are devoid of electrical action at concentrations of 1:10,000, or even higher.

As it is impossible to demonstrate this effect on tissue directly, a further proof is needed that the potential differences in tissues resemble those in our model. As the writer has shown formerly, bio-electricity is chiefly due to potential differences, at the junction of immiscible phases, viz. at lipid membranes. For detailed observations supporting this, see the writer's book on the origin of currents on tissue (*Entstehung electr. Stroeme in Geweben*) published by F. Enke, Stuttgart, 1920.

In regard to the more recent polemic of

*Read before the Jefferson County Medical Society.

Hoeber and his pupils, it can be stated that volatile oils (like guaiacol) fail to conform with some electromotive properties of tissue as Hoeber states correctly, but he is not justified in his belief that volatile oils and tissue lipoids are equivalent; lecithin, a true lipid, does not resemble volatile oils but does resemble tissues in all those particular electrical properties which Hoeber stresses. (A publication concerning this has been sent to "The Journal of Biological Chemistry")

(Concerning Hoeber's so-called protein effects, the writer has shown that these are also produced by starch paste, agar or kazlin. (See Bentner and Menitoff, "Proceedings of the Society for Experimental Biology and Medicine," 1927, 24, 462.)

The above model reproduces potential differences in tissue, particularly in so far as these are influenced by alkaloids qualitatively in the same direction.

If the assumption is justified that potential differences resembling to some extent those of our artificial system, are present in tissues, the addition of alkaloidal salts (and possibly other poisons) would primarily change the potential difference existing inside of living tissue. This change or polarisation would be the cause of the stimulation produced by the toxic substance, just as polarisation is the cause of the stimulation which a current causes, according to Nernst's theory.

We may conclude, therefore, that when an animal collapses after a fatal dose of strychnine, atropine or other alkaloids the cause of its death is a similar injury to its brain, as if it had been struck by lightning or electrocuted.

A full report on this work will soon appear in "The Journal of Pharmacology and Experimental Therapeutics."

Experimental Denervation of the Heart.—In three dogs, the cardiac nerves together with the stellate ganglion were excised close to the heart. It appeared from the experiment that the extracardiac innervation of the heart is more extensive than the macroscopically visible nerves would lead one to suppose. At the end of a year, an extracardiac influence on the heart (other than by the body fluids) could be demonstrated. While cardiac insufficiency was not observed when the animals were at rest, it was apparent when they ran. Thyroidin was without influence on the denervated dogs, while in control animals it caused tachycardia. Two normal dogs fed on thyroidin died with emaciation, while the denervated dogs remained well.

A VISIT TO A LEPROA HOSPITAL.*

By ADOLPH O. PFINGST, Louisville.

It was my good fortune during the past summer to visit a lepra hospital. I had been traveling in Norway and just as I was leaving Bergen for London, to attend the International Congress of Ophthalmologists, I learned by chance that a large hospital devoted to the treatment of lepers was situated in Bergen. Through the courtesy of the director of the institution I was given an appointment to make rounds with him at 7 o'clock on the morning of my departure. As I have in the thirty years or more of my study of medicine never seen a case of leprosy I need not assure you that the visit was one of considerable interest.

I am complying with the request of the program committee in relating my experience in Bergen. In doing so I realize fully that the report will have no practical value, although it may interest you, as it did me, in the light of curiosity.

The hospital in Bergen is quite a good-sized, two-story frame structure, built in a square surrounding a beautiful court of flower beds, evergreens and lawn. It is well equipped with pathological and bacteriological laboratories, operating and dressing rooms, a large library, private apartments for the medical staff and for the nurses, bath equipment, etc. The rooms are large and airy, some facing the court and others overlooking a surrounding park. Two or three patients occupy a room. Everything about the place is immaculately clean.

One could not but be impressed with the present status of leprosy and its management. When we see present conditions where leprosy patients are kept under cheerful surroundings and are attended by a trained staff of physicians and nurses and compare this to conditions as they formerly existed the value of segregation becomes apparent. Although ill-defined records of the existence of leprosy are to be found in the remotest ages and mention is made of it in the earlier books of the Bible, it was not very prevalent until the middle ages. At that time cases in Europe ran high into the thousands. Lepers wandered about as outcasts and were condemned to live apart in huts or in open fields. They wandered about, muffled from head to foot, a hood over the face and carrying a bell to give timely warning of their approach. Segregation has reduced the number of cases so that a case of leprosy today is almost considered a curiosity. However, the disease still exists today to a variable degree in Norway, Sweden, Russia, China, Japan—in fact many countries, including our own. Leprosy hospitals now ex-

*Read before the Jefferson County Medical Society.

ability to close the eyes and the consequent exposure of conjunctiva and cornea, had a thickened dry conjunctiva (xerosis). Some ist in many countries for the segregation and care of those afflicted with this hopeless malady.

Leprosy is, as you know, an endemic chronic malignant affection due to a specific micro-organism and characterized by alterations in the skin, the nerves and the bones. Although it presents manifold symptoms, three distinct clinical types are described. The nodular or tuberculous type, in which the skin is primarily involved, the nervous or anesthetic type, in which the nerves are primarily involved, and a mixed type.

There were over 100 patients in the Bergen hospital, the cutaneous and nervous types being about equally divided. With the one exception of a maniacal patient, who was kept in a padded cell, the patients seemed uniformly cheerful, notwithstanding their knowledge of the hopeless nature of the disease they harbored. The patients were allowed to intermingle in the court, at church service and during meals, but were naturally not allowed to leave the confines of the institution. Upon inquiry the director advised me that the danger of propagation of the disease is very slight as long as the proper rules of asepsis and hygiene are observed. He expressed the belief that closeness of contact bears a direct relationship with contagion and hence patients are never allowed to sleep two in a bed, to shake hands, or otherwise come in contact with each other. In his experience of 33 years the doctor recalled but a single case, a nurse, who had contracted the disease while at the institution. In Bergen patients are visited by the medical staff twice a day. They are treated expectantly—necrosed bone removed, heavy layers of horny skin cut off and other symptoms relieved as they arise. No internal treatment is employed unless otherwise indicated. Chaulmoogra oil, of which so much was expected, is no longer used at Bergen as no results have been obtained from its use.

I was struck at once by the large proportion of eye affections among the patients in the Bergen institution. It seems that this frequency of eye affections is common to all lepers, two-thirds to three-fourths of all cases having some form of eye complication and from fifteen to thirty percent terminating in blindness. I was also impressed by the frequency of facial paralysis. It appeared as though every second or third patient had a unilateral facial immobility. Naturally, these patients were especially prone to eye complications. Many of them, on account of the in-

had symblepharon and quite a few had everted lower lids.

The cornea was frequently involved, showing a peculiar infiltration resembling parenchymatous keratitis. Students of leprosy refer to these cases as "Leptous Keratitis." They run an acute course with conjunctival redness and involvement of the uveal tract and leave a dense cloud in the cornea that at first appearance impresses one as a leucoma, the result of a healed ulcer. Several corneae were marked by punctuate opacities rather than the diffuse clouds. Corneal ulcer is not so common, although it occurs especially in the patients with facial paralysis and at times leads to perforation and destruction of the eye. The infrequency of corneal abrasion is especially to be wondered at when one considers the frequency of anesthesia of the conjunctiva and cornea in the nervous cases.

Quite a few of the patients I saw presented a condition which seems to be quite common in leprosy, viz: the presence of peculiar jelly-like nodes at the corneal limbus. They were yellowish and translucent and had an uneven surface. They showed a tendency to invade the cornea. The ones I saw were all situated at the temporal edge of the cornea and appeared somewhat like large phlyctenules in the precystoid stage. One patient showed a similar node over the sclera—a little away from the corneal edge and resembled very much an eye affected with episcleritis. These nodes are infected granulomata and like the nodes found in the skin of lepers resemble microscopically the nodes of tuberculosis and of giant cell sarcoma. Similar nodes have exceptionally been observed in the retina and choroid as well as in the iris. Uveal inflammation is common in leprosy and soft blind eyes with occluded pupils are among the sequelae.

I was also impressed with the large number of nodular cases of leprosy which were associated with lid involvement. Many had tubercles and these in their process of destruction and cicatrization caused ectropion. I saw quite a number of this kind. There were also several cases of entropion. Complete loss of the eyelashes and eyebrows was also noted in quite a few of the inmates.

RHINOLITH OF UNUSUAL SIZE.

CASE REPORT.*

By A. L. BASS, Louisville.

The patient before you is J. P., male, colored, aged 45, occupation elevator operator. He has been married several years, has no children and does not know whether or not his wife ever had any miscarriages.

Personal history: When eighteen years of age he had what was diagnosed as "soft chancre" which was treated locally and healed. No systemic treatment was given. Three or four years later he had gonorrhea, or at least an urethral discharge, for which he was treated locally with recovery. Family history unimportant.

This man presented at the nose and throat clinic of the Louisville City Hospital, November 11th, 1926, with the following history:

Eight years ago, while having a tooth extracted, his left inferior maxilla was fractured. His face became swollen in that area, and continued to give him trouble for two months. He then consulted Dr. Leo Bloch who removed the left inferior maxilla. Shortly afterward he noticed an offensive odor from nose and mouth which has continued ever since. His nose discharges during the day but becomes obstructed at night, and in the morning a heavy, yellowish substance exudes.

Laboratory findings: Wassermann blood reaction negative. Temperature 98 to 99° F., pulse 80 to 90, respirations 20 to 24. Urinalysis: Color yellow, reaction acid, specific gravity 1023; albumin and sugar negative, many pus cells present.

Examination: Nose, the nasal septum is perforated, beginning about one inch backward from tip of nose, presenting a triangle with base posteriorly. The perforation is continuous with floor of nose until posteriorly where there is a portion of the septum left, which is about one-fourth inch in width. The lateral walls of the antra are absent and the inferior turbinates are practically obliterated, which I judge is due to pressure necrosis from the rhinolith.

The large rhinolith, which is exhibited, practically filled the perforation and was freely movable. The mass of putty-like or caseous material was posterior and superior to the rhinolith and was removed at the operation.

The roentgen-ray plates, which you see, show the rhinolith in both anteroposterior and lateral pictures. You can readily see the difference between the pictures taken before and after operation.

Operation: The patient was admitted to

hospital November 23rd, 1926. On afternoon of the 24th, under general anesthesia with head lowered, the remnant of septum (posterior) was broken down and the rhinolith forced backward into the pharynx and removed through the buccal cavity, being too large to be removed through the anterior nares.

The recovery of the patient was uneventful. He was dismissed from hospital on November 26th, or two days after operation.

The literature shows that there have been about three hundred cases of rhinolith reported. The largest recorded was size of hen's egg weighing 110 mg. Several have been described weighing about 80 mg.

DISCUSSION.

Walter Dean: This patient was under observation for several days in the out-patient department of the city hospital before he was seen by Dr. Bass. Despite the negative Wassermann reaction, I was under the impression that it was a case of syphilitic infection of the nasal septum which had caused necrosis and partial destruction of the vomer and ethmoid bones. This area being constantly bathed in the nasal excretions, the depositions of phosphates and carbonates of calcium and magnesium around the necrosed bone was the logical result.

The specimen which Dr. Bass has exhibited shows on its outer surface the cheesy, caseous substance he has described; but the interior is hard like stone. In the operation care was exercised not to destroy the remaining portion of the septum. The mass was very large and practically filled the nasal cavity.

I am sure the patient has been completely relieved of *ozena* by the operation. The stench in the beginning was very repulsive.

Leo Bloch: I recall having seen and operated upon this man about eight years ago. He was referred to me by his physician for examination and treatment. He had extensive necrosis of inferior maxilla which was naturally thought to be syphilitic in origin, although he had been given antiluetic treatment without benefit. His Wassermann reaction was positive.

Resection of the left inferior maxilla was performed some time later. The operation was very easily completed; all I had to do was to separate the bone with saw and remove it with forceps. I saw no more of the patient after the operation.

Samuel G. Dabney: Dr. Bass and Dr. Dean are to be congratulated upon their method of procedure in the case reported. It is stated in practically all of our text books that rhinoliths are more common in females than in males. These concretions are divided into two distinct classes: (1) rhinoliths formed by the deposition of phosphatic and calcium salts on a foreign body accidentally placed in the nasal cavity; (2) cases of the nature Dr. Bass has reported, where

*Case reported with exhibition of patient and specimen before the Jefferson County Medical Society.

the deposition of these salts occurs on necrosed bone. Syphilis is responsible for many cases of the latter type. This man gives no history of a foreign body in the nose, nor did he have a rhinolith in the beginning, but subsequently the salts of lime and phosphate were deposited on the area where the bone had become carious, and the result was the formation of this large concretion.

St. Clair Thompson's text book on nose and throat diseases, issued during the last year, shows that there have been about three hundred cases of rhinolith reported. I presume these are the statistics to which Dr. Bass referred. Thompson makes one statement that caused some surprise to me, namely, that the deposit of phosphate and calcium comes largely from the tears. I supposed it came from the nasal secretion.

Personally I have seen very few rhinoliths. One was in the person of a young lady who subsequently became a trained nurse in one of the Louisville institutions. When I saw her she was living in the southern part of Kentucky. She came to Louisville to consult me because of an unilateral nasal discharge. In children a one-sided nasal discharge is always suggestive of a foreign body in the nose; in adults it is suggestive of sinus disease. In this young lady's case the unilateral nasal discharge was due to the presence of a rhinolith about the size of a chestnut, not nearly so large as the one exhibited by Dr. Bass. I managed to remove it by a very simple procedure, that is by slipping a wire noose around the mass and withdrawing it through the nasal opening.

When a patient tells me that there is a constant unilateral nasal discharge, my first thought is the presence of a foreign body in the nose, second an area of necrosed bone. While no section has yet been made of the specimen shown by Dr. Bass, I am certain from the history of the case that he will find the deposition of phosphatic and calcium salts occurred over a carious segment of bone.

A. L. Bass (in closing): As to the question of syphilis in the case reported: A Wassermann blood reaction was made when he applied to the clinic, which was negative. Another test was made last week, which was also negative. The history shows that he had a chancroidal sore which healed under local treatment. According to his statement he received no systemic medication.

Rhinoliths are generally composed of substances contained in the nasal excretions, the salts of phosphate, magnesium and calcium. I am satisfied the rhinolith in this case was due to necrosis of the nasal septum. The cheesy material is composed of epithelial debris and masses of cells which are usually found in such substances.

WOMAN'S AUXILIARY NOTES

GARRARD COUNTY PHYSICIANS OF THE PAST

By J. B. Kinnaird, M. D., Lancaster.

These incomplete sketches of the doctors who have lived in Garrard County are submitted to the Woman's Auxiliary for the Kentucky State Medical Association, knowing that all defects and deficiencies will be treated leniently, because they realize that few records of the passing generations are made and tradition must be relied upon to furnish the greater part of the material for writing local history. The majority of physician passing this way have died leaving no record of their lives and deeds. Of the large number who spent a part or the whole of their lives in this county Dr. Abner Baker was the only one who left a diary and autobiography.

The heroism of the country doctor is rarely preserved in song or story. The hardships of the profession are not realized by the public and the daily grind is not crowded with romance though many interesting confidences could be divulged by the family physician. The doctor pursues his arduous duties thinking little of public opinion and less of future fame and glory. Actuated by no motives of selfishness, accepting each day's work as a duty to be performed with diligence, thinking little of the monetary value of his work and services, and less of self preservation, he pursues the even tenor of his way trusting his constituency for support.

The doctor everywhere is an idealist, though there are exceptions, hence is not usually a successful business man. He considers every man honest and just until he is disillusioned. He places confidence in men only to be deceived time and time again. The faithful doctor looks only to success as a means of giving greater service to mankind.

We shall write of the departed heroes who practiced in this locality in the long ago and laid down their lives in the cause of humanity. The medical men of the pioneer days never dreamed of the newer methods of diagnosis and treatment, and were unacquainted with the common fever thermometer, the hypodermic syringe, the microscope, the x-ray, the sphygmomanometer, radium and the synthetic remedies in common use today, but there were great minds, and as a class they were well educated. They were practical and skilful, bold and daring, quick to learn and adopt the advances in medicine and surgery.

Our soldier boys displayed heroic courage in the Argonne, at Catigny, and at Chateau Thierry where the German hordes were turned back and victory assured the Allies, but none were braver than the medical men who faced death in the trenches and upon the battlefields to save the wounded and rescue the dying. None

were braver than the doctors of Lancaster who sacrificed their lives in the Cholera epidemic of 1833, and later in 1873, when they gave their time and means to save the afflicted. In civil life the saving of a drowning child or the rescue of one from a burning building entitles the hero to a Carnegie medal, but every day physicians are risking their lives for the benefit of suffering humanity with no expectation of reward.

Since 1796, when Garrard County was organized and Lancaster, at the Cross Roads, was selected as the county seat, several generations of doctors have been born, have lived and practiced here, have laid down their burdens and gone to their reward leaving only memories of their lives and deeds. The generosity and kindness, the hardships and deprivations of our forebears have not been recorded, and even those who knew something of the pioneers have long since returned to dust. "He lived, he died" sums up the mighty record of many heroes.

To properly understand and appreciate the hardships of the earlier practitioners of this county we must remember there was not a single foot of turnpike in the state until about 1830, when a macadam road was built in Mason County, which was extended to Lexington, afterwards to Lancaster, being completed in 1838. We must remember doctors invariably rode horseback. The majority of calls were made over the rough beds of rocky creeks. The dangers from ice covered roads and floods, the frequent trips through storms and snow, through sleet and hail, were hazards which we cannot visualize. The only means of negotiating these roads was by foot or horseback. Few were the gates upon the farms even fifty years ago. The traveler in order to go from one farm to another to make his rounds was forced to let down "bars" and it was no pleasant or easy undertaking to alight in the mud or snow to remove rails to gain entrance to a residence.

Of the many who left no record of their lives, who lived and labored in this locality, may be mentioned Doctors B. F. Rhoton, A. Edmondson, Ben Mason, George Mason, L. M. Buford, J. P. Burton, Harvey Baker, Hartford Peters and George Givens. All honor to the memory of these dear doctors who labored in this city only to be forgotten.

A search for the graves of the pioneer doctors in the old cemetery near the Louisville & Nashville depot resulted in finding a shrunken grave with an ancient flat slab which was cracked upon which was inscribed: "Doctor Robert McConnell, Born in November 1790, departed this life May 7, 1832." Dr. McConnell once represented this county in the legislature.

All honor is due the country doctors who remained in Lancaster during the cholera epidemic in 1833, when over a hundred citizens died, among them two devoted brothers—Drs. L. V. Gill and Wm. Gill, who repose in neglected

graves near Lancaster. Let us revere the memory of these faithful men who laid down their lives that we might live.

Let us not forget to revere the memory of Dr. Benjamin F. Duncan who survived the epidemic of 1833, lived a long and useful life, rearing a large and respectable family. Dr. Duncan was born near Goshen, in Lincoln County, May 2, 1808 and died at his home in this city August 13, 1865. Nellie, the youngest daughter, married Dr. W. S. Elkin, who now lives in Atlanta, Ga., where the doctor has been eminently successful.

Dr. Lynn Banks Hudson was born in Garrard County, January, 1814; graduated from the Medical Department of Transylvania University in 1837 and practiced here for 27 years, dying at his son's residence at Camp Dick Robinson in 1898, and was buried in Cave Hill Cemetery, Louisville. He was one of the best medical financiers that ever lived in the county, one of the old time ethical gentlemen, and left behind an enviable record for honesty and integrity.

Dr. Samuel Letcher was born in Lancaster, practiced here for a time and removed to Lexington where he was eminently successful. Dr. Robert Peter, in his history of the Medical Department of Transylvania University says: "Samuel M. Letcher, M. D., of a prominent Kentucky family, also a graduate of Medical Department of Transylvania University, who had won distinction in Lexington, was called to the chair of Obstetrics and Diseases of Women and Children in that school in 1851 and performed the duties of that chair with ability and success until the close of the Medical College in Lexington in 1857. He died February, 1863, in Lexington.

Dr. Mathew D. Logan was born in Marion County, January 8, 1822. Studied medicine with Dr. Huffman, Stanford; graduated at Jefferson Medical College, Philadelphia in 1850 and practiced medicine in Lancaster until 1861 when he enlisted with the Confederate Army. He was a prisoner of war and confined at Columbia, Ohio. Dr. Logan was a gentleman of the old school, polite, affable, kind, generous and jovial and was loved by all who knew him. He died in Boyle County at the home of a nephew.

"Dr. Anthony Hunn was born and reared in Saxony, Germany, but came to the United States when a young man. He was educated in the same institute in which Martin Luther was educated, but finished in Paris where he was a tutor for several years. He came to Kentucky about 1800; practised his profession of medicine; published a medical journal in Engleman, on Hanging Fork; lived in Lincoln and Boyle Counties, then in Lancaster where he died October, 1884." Smiths & Perrins History of Kentucky. Dr. Hunn is mentioned in Dr. Carters book on the practice of medicine published in 1819 at Paris, Kentucky as being a model student, intelligent and capable.

Dr. Abner Baker, who in his time was among the leaders in church and state, was born February 18, 1775 in Prince Edward County, Virginia and came to Kentucky in 1794. He studied medicine with his brother William who had been educated at Hampden-Sidney College. The doctor was an honest, capable and upright Christian gentleman who was the leading spirit in this community when he lived here.

Dr. Charles Fox practiced medicine in this city when a young man, going to San Francisco during the gold craze in 1849 where he became a broker. After accumulating a considerable fortune he retired from business, dying at a ripe old age.

Dr. William Cooke was born in Lancaster in 1820 and died in 1846. Practiced here for short time, went to Mississippi where he contracted tuberculosis and, upon his return, died at his mother's home in Lancaster.

Dr. Edward Cooke was born here in 1829, graduated from Centre College and Medical Department, University of Pennsylvania. He was considered a fine surgeon and ranked high in his profession.

Dr. Joseph Perkins Letcher was born on June 6, 1807 about one mile from Lancaster. Dr. Letcher graduated from the Medical Department of Transylvania University in 1839. He practiced in Lancaster for a while, going to Paint Lick where he was associated with Dr. Reid. From Paint Lick he went to Nicholasville. He was a charter member of the State Medical Society. In 1857 he was elected professor of "Diseases of Women and Children" on the faculty of the University of Iowa, at Keokuk, Iowa. In 1867 he located in Lexington where he remained until he was too feeble to practice, when he returned to his native county to spend the rest of his days with his daughter, Mrs. Ellen Overley, dying in 1894.

Dr. Lyman B. Todd, an old friend living at Lexington, says in his Tribute: "His home was one of hospitality and refinement. He was well informed and a judicious and excellent practitioner of medicine; fond of the best works in every department of literature, and read continually. He possessed an excellent and well trained memory, a fine social gentleman of the old school, and in many ways worthy of imitation. As before stated Lancaster was his birthplace, and surely it was a beautiful Providence that the closing years of his life, unusually and pleasantly protracted, should be spent amid the associations of his youth, the scenes of his early and happy manhood, comfortably and pleasantly spent, surrounded by his fond and devotedly loving daughter, grand daughter, kindred and remaining friends of his early days, in full view of the green hills far away, beautiful river, lovely pastures and flowers of his old-loved Garrard County."

Dr. Jennings Price was born at the old Price home on the Richmond road in Garrard County. The doctor taught school for a time and was elected to the Legislature in 1843-44. Graduated from the Medical Department, Transylvania University in March 1837. After practicing many years he retired and went into the banking business. The doctor died at the age of 83, honored and respected by all who knew him. He was methodical in everything, a loving husband, absolutely honest and frank. Dr. Joe Letcher said he had known him from early boyhood, and that he was confident Dr. Price had never told a falsehood and had never deceived anyone, and that he had lived a life of absolute purity. His death followed a fracture of the femur from a fall. Dr. Johnson Price, youngest son of William Price, was born in Garrard County and graduated at Transylvania University. He practiced with his brother Jennings until the call for volunteers for service in the Mexican war. He organized Company A and was elected Captain. Colonel W. J. Landram was a member of the company. Both served with honor and both were recognized by the Government. Dr. Price went with Dr. Fox to California where they were partners for a time. The doctor was elected State Senator and lived in California until his death in 1886.

Dr. William Jennings was born in Lancaster June 10, 1827 where he spent his boyhood days. Studied medicine with Dr. J. S. Pierce and practiced here until the beginning of the Mexican war when he enlisted and served with Colonel Humphrey Marshall's cavalry. At the close of the war he returned and married Miss Lucy Hawkins, April 9, 1852. Soon after marriage he went to Louisiana where he practiced with his brother James. He returned to Richmond, Kentucky where he practiced until the beginning of the Civil War, joining Morgan's Brigade as medical director. At the close of the war he resumed practice in Richmond, where he died July 13, 1892.

Dr. James Jennings, brother of William Jennings, was born in Lancaster February 16, 1830 and practiced until 1860 when he located in Louisiana. He enlisted in the Confederate Army and when Federal soldiers demanded his appearance he escaped to the swamps and was never again seen. No explanation of the manner of his death ever came to his family.

Dr. David Bell was born July 19, 1810 about three miles from Lexington, where he was educated. At the age of 19 he began the study of medicine under the preceptorship of Dr. Ben Dudley, graduating at Transylvania in 1832. He began the practice at Hannibal, Missouri, but returned to Kentucky in a short time and located at Lancaster. On June 5, 1834 he married Miss Charlotte Corday Robertson, a daughter of Chief Justice George Robertson. The

following March he moved to Lexington. He was a successful physician and surgeon who contributed a great deal to the science of medicine with his pen, and as a member of the College of Physicians and Surgeons. Died March 3, 1888 at his home in Lexington. He rendered heroic service during the cholera epidemic in Lexington in 1833. In the resolutions adopted by the local physicians at Lexington, it was said: "As a citizen he was useful, honorable, public-spirited and trustworthy; his daily life was a bright example and worthy of imitation to people of sobriety, integrity, and sprightliness—a Christian gentleman, an elder in the Presbyterian Church for more than forty years."

Mrs. Ruth B. Brown, of Versailles, a daughter of Dr. Bell, writing to a friend in this city, among other things said: "I have heard my father who was a great joker, say that 'he and one other old woman were the first and only elders in the Presbyterian Church in Lancaster.'"

Dr. Alex R. Hann lived and practiced here between 1840 and 1847. Married Miss Leonora McCurdy, of Frankfort. Dr. Talbott, a son-in-law, writing from Burkesville, says that: "Dr. Hann lived through two or more epidemics of cholera, one while living in Lancaster. He opposed the treatment of cholera with calomel (a treatment much in vogue in that day) depending on supportive measures, lots of water and salines. He practiced for sometimes in Danville and finally moved to Madison County where he died."

Dr. J. S. Pierce was born in Boyle County and practiced medicine here for many years. Little information in regard to the doctor can be found, but we know he was practicing in 1851 when he was attending the father of Dr. O. P. Hill. In the Lancaster Cemetery upon his tomb is the following inscription: "Jeremiah Stanton Pierce. Physician, Born September 15, 1802. Died December 16, 1856." The doctor was defeated for Congress by Judge Elliott.

Dr. Stephen Letcher Burdett was a genius though brusque and rough in manner. He was born in Garrard County, August 7, 1826, and died in 1882 near town. Upon his metal monument is inscribed: "He wears the crown he wore. An originator, never imitated, always in advance." He was a surgeon in the Federal Army during the Civil War and was regarded as a good operator. A story was told of him which illustrates his character. He had appeared before the Board of United States Surgeons for examination for position in the medical service. While being quizzed the examiner said: "Doctor, if you should amputate the thigh at the middle third what arteries would you tie?" Without hesitation the doctor replied: "By jingoes, I would tie everything in sight!" The examiner passed him for the job. He was disabled for life in 1874 by being accidentally shot while go-

ing to see a worthless negro who had been wounded in a riot.

Dr. James M. Re'd was born at Paint Lick, December 8, 1812 and died July 1878. He attended lectures at Transylvania, graduating at University of Pennsylvania in 1842. His entire professional life was spent at his birthplace.

Dr. Alex R. McKee was born February 4, 1816 in the house now owned and occupied by Miss Jennie Duncan, his niece. After preliminary studies the doctor graduated at Centre College and in medicine from Jefferson Medical College. He practiced in this county for a while, going to Richmond, thence to Danville in 1859, where he was in active practice until his death in February 1886. Dr. McKee was an honorable, ethical professional man, whose sense of honor was so great that he despised and never forgave a breach of etiquette or ethics in a confere. Having a lovable disposition he was adored by his patrons who stood by him until the last moment.

Dr. Oliver P. Hill was born in Garrard County March 2, 1814. He was educated in the common schools of the county and worked upon his father's farm until he was 20 years of age when he began the study of medicine under Dr. William Pawling, of Lexington, graduating from Transylvania in 1838. In 1840 he began the practice of medicine in Lancaster and continued until his death in 1892. He traveled extensively in Mexico, Central America and West Indies. He was a great student, a voracious reader, a natural linguist, knowing French, German and Spanish which he mastered without assistance. He had a remarkable retentive memory and without referring to the text could quote page after page of anything he had read. As a conversationalist he was unexcelled.

Dr. Hezekiah Evans, one of the principals in the famous Hill and Evens feud, was born on October 1801 and was assassinated October 9, 1862, as stated on his tomb located on the farm on Sugar Creek where he lived at the time of his death, which occurred on the way home from Camp Dick Robinson where he had collected quite a sum of money. He was murdered and robbed by an assassin who confessed on his death bed in Illinois that he killed the doctor for his money.

Dr. Elijah Evans, son of Hezikah, died at Nicholasville at the age of 92 after having practiced in the county many years. He graduated from the Physio-Medical, Cincinnati, in 1863. He was amiable, upright, honest and lived an exemplary life. His wife is still living at an extreme old age.

Dr. Henry C. Herring was born in Garrard County, July 12, 1833 and died January 16, 1905. He practiced medicine in his native county his entire life and was a successful practitioner. He was firm in his convictions, friendly

and affable. He had three children, two girls and a boy, who still live in this community. Doctor Herring enjoyed a large practice until his death.

Dr. William H. Pettus was born on Drakes Creek in Lincoln County, February 28, 1808. He began the study of medicine under the tutelage of Dr. Anthony Hunn and in 1851 graduated from Transylvania. Practiced here until 1880, when he died. He was a conscientious man, well educated and progressive.

Dr. Jackman was a storage battery, possessing a great deal of energy, though small in stature. He was living here during the Civil War. He came to Lancaster a poor, unknown doctor, but with grit and energy rode into a good practice. It is told by the old citizens that he owned a tall horse which he hitched in front of his office punctually every day. Early in the morning he would quickly mount his steed and ride hurriedly to the country. In a short time he would return, remount and take another road, repeating this from time to time all day and every day until finally he had a large and lucrative practice. We cannot learn where or when he died.

Dr. William N. Bush was born in Oglethorpe County, Georgia, August 26, 1835. Graduated from Georgia College of Medicine in 1857. He served four years in the Confederate Army and was married to Esee Huffman in Tallahassee, Florida, February 23, 1864. Came to Lancaster in 1865 and practiced here until his death which occurred November 29, 1900. Dr. Bush was a well educated man, a student who devoted his spare time to reading medical literature. Few doctors were better versed in medical lore. He kept abreast of the times in medicine, but was too timid to attempt even minor surgical operations. Being delicate, nervous and easily depressed he was never optimistic. He was too kind, too timid, too unobtrusive to make financial success. He died honored and respected by the whole community.

Dr. William Huffman was born in Lincoln County and came to Lancaster after the Civil War, where he practiced until his death March 24, 1897 and was interred in our cemetery. The doctor was a brilliant man, well qualified to ornament the profession and would have been a success had he devoted more time to work and less to pleasure. Nothing gave him more delight than a fox chase. He was genial, humorous, full of mischief, sociable. His patrons were devoted to him.

Dr. Nelson Mays was born at Little Hickman November 22, 1841. He graduated from University of Louisville afterwards taking a post-graduate work at Ohio Medical College and Bellevue Hospital Medical College, New York. Married Mrs. Marion Wolford in 1876 and located in Lancaster where he remained a number of years, going to Paint Lick until advancing

years forced him to retire. Died in Richmond, January 2, 1918. True to his friends, forgiving in disposition, optimistic and genial he never became a pessimist nor bore a grudge.

Dr. William S. O'Neal was born in Boone County, Kentucky October 3, 1838. Graduated from Ohio Medical College in 1861. He located in Lancaster in 1885, where he died in 1898. At the time of his death he was a member of the State Medical Association and also a member of the State Board of Health. He was energetic, active, progressive, polite, kind and hospitable and had a smile for everybody.

Dr. L. J. Frazee came to Garrard County during the cholera epidemic in 1873 and remained to practice after he had succored the living who gave him a hearty welcome. He was a jolly fellow, a good sport, fairly successful and after several years moved to Richmond, where he died.

The impression prevails that Dr. L. S. McMurtry was born in this community, but history records that he was born in Harrodsburg in 1850. His youth was spent in Lancaster where he attended the Male Academy under the tutelage of Uncle Joe Myers, an eccentric but a thorough and exacting teacher. Dr. McMurtry graduated from Centre College in 1870 and took his course in medicine at Tulane University, where he received his degree of M. D. in 1873. He began practice in Danville where he made a reputation as a surgeon. In 1882 he was elected Professor of Surgery in the Kentucky School of Medicine, Louisville. During his life he was honored by the presidency of the American Medical Association, Kentucky State Medical Association, Central Kentucky Medical Society and President of the State Board of Health. He died several years ago and was buried in Danville. He was a skilful surgeon, a fine orator and after dinner speaker, sociable and courteous.

Among the doctors who "hung up their shingles" in Bryantsville and practiced for a longer or shorter time we find the name of Graham, Huston, Tillet, Mullins, Traylor and Armstrong. Of these, Dr. Armstrong was the most picturesque. He came from Fayette County and located at Bryantsville where he married. The doctor was educated in Fayette County and graduated in medicine at the Kentucky School of Medicine under the tutelage of Dr. Ethbert Dudley. The doctor was an eccentric man in every way. Highly prejudiced against all other physicians who were in competition with him, his descriptive nicknames for his opponents were ludicrous. When called at night to visit a patient he would almost invariably refuse to go, but after the messenger had returned home he would get up, dress, and make a hurried trip across country, frequently arriving before the messenger had returned. He was an honest,

straightforward citizen, a courtly gentleman, narrow in many respects but loved dearly by his friends for whom he would practice never asking pay—consequently he died a poor man.

Another eccentric doctor was Dr. Charles Spilman, of Paint Lick, who was a Surgeon in the Federal Army during the Civil War. He was an original thinker and had not patience with anyone who would not agree with him. He was considered a fine diagnostician.

Barney Stagner. Many years ago there lived in Garrard County a man who made trusses for the treatment of hernia which he was supposed to cure without operation. Hence, there was a demand for them from many sections. This instrument grew in favor and the fame of the inventor spread throughout the length and breadth of the country. Dr. Samuel D. Gross, of Philadelphia, one of the most distinguished surgeons and writers in his day, learned of Barney Stagner's truss and in his *System of Surgery*, edition of 1864, says: "The trusses of the present day are, in every respect, very superior to those of a quarter of a century ago. The instrument invented by Stagner and Hood of Kentucky, and afterwards improved by Chase, Dodson, Sheldon and others, are nearly as perfect as it is possible to make such contrivances." Stagner was not considered a doctor, but was a fine mechanic. Smith's *History of Kentucky*, 1886, says: "The truss now in general use in the treatment of hernia was the device of a Kentucky gentleman named Stagner, and a Dr. Hood, Stagner having invented the first form of the instrument, Hood having improved upon the model so as to perfect it."

Doctors too rarely participate in political affairs. Some of the physicians in this county in the long ago had political aspirations, and Collins mentions in the "History of Kentucky" the names of several doctors who represented Garrard County in the Legislature. Dr. Abner Baker served in 1805; Ben Mason in 1821; Robert McConnell in 1827; George Mason from 1835 to 1840; Dr. Jennings Price, 1843.

In these sketches we have in a feeble way undertaken to write a few words in regard to the medical men who have long since returned to dust and whose memory we wish to perpetuate. If these lines may stimulate other communities to honor their family physicians by recording their good deeds and keeping their names from passing into oblivion we will be fully repaid for preparing these sketches.

AN INVITATION.

To the Members of the State Auxiliary:

We extend you a most cordial invitation to attend the State Convention at Owensboro, and are planning to make your visit to our city an enjoyable one.

Our country club and golf course will be open to you. A golf tournament is being arranged for the ladies.

You will find excellent hotel accommodations.

We are looking forward with pleasure to meeting and entertaining you when you visit us in October.

The Daviess County Auxiliary,
By Mrs. O. W. Rash, Secretary.

SECRETARY-TREASURER'S REPORT

To the Members of the Woman's Auxiliary:

The past year has been a period of growth and activity for our State Auxiliary. Mrs. Stilley, our President, has enheartened us all and urged us on to greater exertion.

The number of County Auxiliaries now organized is fourteen (14). At the last annual meeting there were but seven (7) counties organized.

Our membership has increased from twenty-two (22) at Frankfort, September 22, 1926 to two hundred and twenty-two (222) September 1, 1927. The campaign for membership conducted by the First Vice President has enlisted the interest of many.

Since the requirement for membership in our national organization, the Woman's Auxiliary to the American Medical Association, is payment of twenty-five cents (25c) for dues per capita, the Secretary-Treasurer has paid the National Treasurer this sum as promptly as the dues were sent in. Therefore, every member of the State Auxiliary is a member of the Auxiliary of the American Medical Association.

The Woman's Auxiliary of the Southern Medical Association requires as dues one dollar (\$1.00) for each county auxiliary in the state. These dues have been sent to the Southern Treasurer as promptly as the Secretary-Treasurer has received them from the County Treasurer.

Interest in the Hygeia Campaign is increasing. Treasurers will welcome this as a means of adding to the income of the County Auxiliaries.

The project of collecting the historical medical data of Kentucky has been started. Already eight (8) contributions have been made from five counties. Also, Dr. John McMullen of the United States Public Health Service, now located in New Orleans, has sent in several papers, pamphlets and kodak pictures of his work in the mountains for the eradication of trachoma.

The counties that have sent in some historical data are:

Harrison, Marshall, McCracken, Campbell, Garrard.

Mrs. J. B. Kinnaid, Lancaster, one of our members has written an excellent paper on the pioneer physicians of Garrard County which is published in the September 1927 number of the Kentucky Medical Journal. We are hopeful that others will follow the laudable example of Mrs. Kinnaid and help to preserve the names and the records of the medical pioneers of their counties.

THE JOURNAL.

The outstanding project of the Woman's Auxiliary of the Kentucky State Medical Association during the past year was the publication of the Woman's Auxiliary Number of the Kentucky Medical Journal. This was made possible by the generosity, the kindly helpful encouragement and the stimulating confidence in the Auxiliary demonstrated by the Kentucky State Medical Association.

Mrs. V. A. Stilley, President, had asked that the Woman's Auxiliary be granted the privilege enjoyed by similar organizations in other states, of publishing the news items and official notices of the organization on a page to be known as the "Woman's Auxiliary Page" in the regular issues of the Kentucky Medical Journal.

At the annual meeting of the State Auxiliary in Frankfort, September 20-23, 1926, the Secretary of the State Medical Association, Dr. A. T. McCormack, announced that the Association had become so interested in the Auxiliary, that, unanimously, this wish was granted, and,—more than that—the Association had voted unanimously to offer the entire publication of one issue of the "Journal" to the women, this issue to be known as the "Woman's Auxiliary Number."

Dr. McCormack suggested that the December issue would be advantageous from an advertising standpoint and that the treasury of the Auxiliary could be considerably strengthened if the women would secure advertising for it. The Association would give the space for advertising, the State Auxiliary Treasurer might have seventy-five percent, the County Auxiliary Treasurer twenty-five percent of all the money thus obtained. Later it was found that the women could, in some instances, secure advertising for a longer period than the single month. For all such contracts—three months, six months or one year—the Auxiliary, it was decided, might have twenty-five percent of the sum collected. This twenty-five percent was subject to the same rates for State and County as the one month contracts. (For results see Auditor's Report, Exhibits I and J.)

This generous offer of the State Medical Association was unanimously accepted by the Auxiliary and all agreed to help in every way possible, but no one quite knew where or how to begin the work of publishing a "Journal." Here was a richer gift than any of us had anticipated—an overwhelming new responsibility.

Mrs. A. T. McCormack was elected Editor and given carte blanche to call on the entire membership of the State for assistance in building the "Journal" as seemed advisable.

Because of previous engagements it was impossible to begin work on the "Journal" until October 4th. Then, gratefully accepting the generously proffered stationery of the State Association and the office space, equipment and stenographic assistance of the State Board of Health, 532 West Main Street, Louisville, the Editor plunged into a six weeks revel of work, punching in on the time clock at eight-thirty a. m. and punching out at four-thirty p. m. daily—not always excepting Sundays. And everybody helped—it was fun! And such an education!

No previous publication of a Medical Journal by women could be found nor was known at any of the libraries of State Medical Associations from which we secured answers to our inquiries. It was necessary to blaze our own trail.

Our very small membership seemed woefully inadequate to the task which daily loomed greater in proportion as we realized more fully the meaning of the term "building a journal." Here, the Secretary of the State Medical Association gallantly came to our aid. He sent a questionnaire to each of the Secretaries of the County Medical Societies asking for the names and addresses of the wives, daughters, mothers, sisters, and widows of each of the members. This brought us a larger and more intimate acquaintance with the women of the profession in Kentucky. Over two thousand letters with enclosures of contract blanks and information concerning the "Journal" were sent to these addresses. Soon the county reports, questions and advertising contracts began to arrive through the mail. The telephone tingled and the Louisville women appeared in person to help. Also a few members from distant parts of the State called and aided with their counsel and advice.

One hundred and twelve letters were written requesting or concerning manuscripts. The response was splendid. Among our contributors are national officers of the Woman's Auxiliary, American Medical Association, Officers of the Woman's Auxiliary of the Southern Medical Association, the President of the Kentucky State Medical Association, the Editor of the American Medical Journal, the Executive Secretary, Bureau of Health and Education, American Medical Association; the Surgeon-General, United States Public Health Service, the Chairman,

American National Red Cross; the Director of the National Illiteracy Crusade; Professor of Public Health at Yale and Past President of the American Public Health Association; a Professor at Harvard now studying in Paris; and several friends from Texas, the "Mother State," besides a number of interested and cooperating associates in Kentucky.

The "Woman's Auxiliary Notes" now found in the regular issues of the Journal provide an excellent medium for keeping in touch with each other. The meetings of your County Auxiliary, and the projects you are undertaking are of interest to all the other County Auxiliaries. A prompt report of your activities from your Secretary or Publicity Chairman to the Editor will greatly assist in making Our Page in the Journal live, helpful and worthwhile.

FINANCIAL REPORT

The state of finances of the Woman's Auxiliary will be found under Exhibits I and J of the Auditor's Report, immediately following that of the Kentucky State Medical Association.

Believing that a detailed account of the advertisement activities of the County Auxiliaries for the Woman's Auxiliary Number of the Kentucky Medical Journal (December 1926 issue) will be of interest, the following report is

appended:
Statement of Journal Advertisements.
Through the generosity of the Kentucky State Medical Association the opportunity to swell the funds in the Treasuries of the State and County Woman's Auxiliaries was made possible in the following manner:

All new advertisements for the December Journal secured by members of the Auxiliary were to be published in the December Journal and the money secured for these advertisements turned over to the Auxiliary—twenty-five percent (25%) of the total sum to the County Treasurer and seventy-five percent (75%) to the State Treasurer.

During their campaign the women found that they could obtain a few advertisements for longer periods. On all such advertisements, the Auxiliary was allowed twenty-five percent (25%). The sum of this twenty-five percent was then divided as the above—twenty-five percent (25%) to the County Treasurer and seventy-five percent (75%) to the State Treasurer.

The Woman's Auxiliaries of the Christian, Harlan, Jefferson and Marshall County Medical Societies have most creditable records for securing advertisements. The record for each county follows:

ADVERTISEMENTS FOR WOMAN'S AUXILIARY NUMBER, KENTUCKY MEDICAL JOURNAL				
	A'mt. of Contract	Total Rec. by Auxiliary	Total kept by State Auxiliary	25% Com. pd. Co. Auxiliary
MARSHALL COUNTY				
MRS. V. A. STILLLEY				
Wm. Macon Memorial Hospital	\$ 25.00	\$ 25.00		
Murray Normal School	45.00	22.50		
Totals	\$ 70.00	\$ 47.50	\$ 36.63	\$ 11.87
HARLAN COUNTY				
MRS. WM. MARTIN				
Dr. Milus Gunn	\$ 10.00	\$ 5.00		
Harlan Hardware Co.	10.00	10.00		
Lewis, Campbell & Jones	10.00	10.00		
MRS. W. R. PARKS				
New Harlan Hotel	12.50	12.50		
MRS. W. E. RILEY				
Catherine Marks	10.00	10.00		
Totals	\$ 52.50	\$ 47.50	\$ 35.63	\$ 11.87
CHRISTIAN COUNTY				
MRS. R. L. WOODARD				
Professional cards for 3 mo. each from:				
Dr. F. H. Bassett	\$ 49.50	\$ 24.77	\$ 12.38	\$ 12.35
Dr. Austin Bell				
Dr. F. M. Brown				
Dr. J. J. Ezell				
Dr. Gert Gaither				
Dr. P. E. Havres				
Dr. W. F. Gary				
Dr. T. W. Perkins				
Dr. J. E. Stone				
Dr. R. L. Woodard				
A Friend				

The total sum of advertisements secured by the Jefferson County Auxiliary was \$994.00. One contract for \$10.00 was paid for in the printing of letter heads and envelopes for both the Jefferson County and the State Auxiliaries. The total sum collected to date is \$894.28. From this amount \$90.00 was used to pay the expenses of Mrs. D. J. Williams to the Frankfort meeting, leaving a balance of \$804.28. The amount due the County Treasury, 25% of \$804.28 is \$201.07; however, some accounts are still outstanding, our portion \$47.50 to be exact. We hope to collect these soon. Two percent (2%) allowed for cash paid in ten days was deducted from some of the advertisements. A detailed statement is attached.

On the two advertisements secured for the year 1927, the Jefferson County Auxiliary will collect sixty-two cents per month.

	A'mt. of Contract	Total Rec. by Auxiliary	Total kept by State Auxiliary	25% Com. pd. Co. Auxiliary
JEFFERSON COUNTY				
MRS. E. R. PALMER				

Baird's Pharmacy	\$ 12.50	\$ 12.25		
Dr. E. R. Palmer	1.50	1.50		
	14.00	13.75	\$ 10.31	\$ 3.44
MRS. DAVID COHEN				
Jones Apothecary, 1-8 page.....	10.00	10.00		
Matthews Drug Co., 1-8 page	10.00	10.00		
	20.00	20.00	15.00	5.00
MRS. H. H. BISHOP				
Elks Club, 1-2 pg.	45.00			
H. C. Carpenter, card	5.00	4.90		
Geo. H. Gould, 1 yr. 1-4 pg.	23.44	13.77		
	73.44	18.67	14.00	4.67
MRS. P. E. BLACKERBY				
Schrader Bros.	15.00	14.90		
Weldon Shop	12.50	12.50		
	27.50	27.40	20.55	6.85
MRS. WALKER GOSSETT				
Bennett Drug Co.	12.50	12.25		
Consolidated Realty Co.	25.00	25.00		
Jefferson County Milk Commission.....	25.00	25.00		
Scottow Studio	12.50	12.25		
	75.00	74.50	55.87	18.63
MRS. A. T. McCORMACK				
Commonwealth Life Ins. Co.	40.00	39.20		
Walnut Cafeteria	14.06	8.36		
C. T. Deering (paid for in printing)....	10.00			
	64.06	47.56	35.67	11.89
The following ads secured by Mrs. McCormack early in September to defray the expense of Mrs. D. J. Williams, Pres. Southern Medical Ass'n to State meeting in Frankfort, Sept. 1926—Total \$90.00				
Newman Drug Co.	40.00	39.20		
Standard Oil	25.00	25.00		
National Bank of Ky.	25.00	25.00		
Total secured for expense of.....	90.00	89.20		
MRS. IRVIN ABELL				
Jennie Benedict	25.00	25.00		
Brooks Denhard Surg. Insts.	12.50	12.50		
Brown Office Bldg.	12.50	12.50		
Brown Theatre	12.50	12.50		
Brown Taxicab Co.	25.00	25.00		
Burdorf Co.	12.50	12.50		
Buschmever's Pharmacy	12.50	12.50		
Capitol Hotel	12.50	12.50		
Crab Orchard	12.50			
T. M. Crutcher Dental Sup.	12.50	12.50		
Delux Beauty Parlor	12.50	12.50		
Fidelit- Trust Co.	40.00	40.00		
H. M. Frankel	12.50	12.50		
French Lick Springs Hotel	40.00	39.20		
Miss Bezzie Hannon	12.50	12.50		
Haller's Pet Sho p.....	12.50	12.50		
Harcourt's	37.50	37.50		
Hillerick & Bradsby	12.50	12.25		
Krausgill Piano Co.	25.00	25.00		
Lafayette Hotel	12.50	12.50		
L. & N. R. R. Co.	12.50	12.25		
W. L. Lyons Co.	12.50			
A. McGill & Co.	12.50	12.50		
Mammoth Cave Co.	12.50	12.50		
Mayflower Apts.	12.50	12.25		
Muldoon Monument	37.50	37.50		
Packard-Louisville	25.00	25.00		
Peacock Shoe Shop	12.50	12.50		
C. D. Pearson & Son	12.50	12.25		
Old Curiosity Shop	12.50	12.50		
Seelbach Hotel	25.00	25.00		
W. K. Stewart Co.	12.50	12.50		
Sutcliffe Co.	25.00	25.00		
U. S. Foil Co.	12.50	12.50		
R. E. Vaughn	12.50	12.50		
Edith Walker	12.50	12.50		
	\$630.00	\$603.20	\$452.40	\$150.80
Total Jefferson County Ads	\$994.00	\$894.28	\$603.80	\$201.28

(Mrs. A. T. McCormack)

Respectfully submitted.

JANE TEERE McCORMACK, Secretary-Treasurer.

BOOK REVIEW

PRACTICAL SURGERY OF THE JOSEPH PRICE HOSPITAL, by James William Kennedy, M. D., F. A. C. S. Surgeon to the Joseph Price Hospital, Philadelphia; Consulting Surgeon to the Norristown, Catesville and Chambersburg Hospitals; Formerly in Charge of the Gynecological and Obstetrical Department of the Philadelphia Dispensary; Member of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Etc. Illustrated with 129 original half-tone plates. Some in Colors. F. A. Davis Company, Publishers, Philadelphia, Pa. Price \$10.00 net.

No attempt has been made to write a complete treatise on any subject discussed in the volume. No logical or regular order has been followed in regard to history, etiology, pathology or surgical treatment, the text consisting largely of discussions which are not popular teaching.

An attempt has been made to deal in constructive criticism of principles involved in the surgical pathology of some important lesions as opposed to a discussion of destructive personalities.

It has been said by authorities that Dr. Price was the most forceful teacher of his age in clinical demonstration and it is on account of this helpful and great force of the man which remains unrecorded in tangible form, which urges the author to produce some evidence of his work.

A BIPOLAR THEORY OF LIVING PROCESSES, by G. W. Crile. Edited by Amy F. Rowland.

The MacMillan Company, Publishers, New York.

This volume represents an attempt to present certain conclusions which are based upon researches which have been in progress continuously from their initiation in 1898 to the present time. The progress of these studies and the development of the theory which is based upon them are summarized in the introduction.

An attempt has been made to include in the bibliography the titles of the publications which we have found especially valuable in the development of the bipolar theory. It is obviously impossible, however, to include the name of every author from whom we may have gained information or suggestion which has been of direct value in the development of the theory here presented.

The names of the many collaborators who have been associated with me in these studies have been mentioned in previous publications, or are cited in the text of this volume, but I should like in addition to express here my sense of indebtedness to all who have shared in the experimental details and in their interpretation and presentation.

FORD'S BACTERIOLOGY. By William W. Ford, M. D., Professor of Bacteriology, School of Hygiene and Public Health; Lecturer on Hygiene, School of Medicine, Johns Hopkins University. Octavo of 1250 pages, illustrated. W. B. Saunders, Philadelphia, Publisher.

This new text-book gives complete and accurate descriptions of all the microorganisms commonly encountered in medicine, comparative pathology, and hygiene and public health. The selection of the species included has been made chiefly upon the author's personal observations.

During the progress of the writing of the book a very large number of cultures were investigated and complete records kept of their morphology, cultural reactions, and pathogenic properties. These descriptions have served as a foundation for the sections on systemic bacteriology.

Special emphasis, of course, is laid on those organisms responsible for disease in man and animals. The anaerobic bacteria, for instance, are reported at length; the principal aerobic spore-bearing species are included; the spirochetes and their significance in disease production, heretofore inadequately discussed in current text books, are here presented in detail, as are the filtrable viruses. Technic, infection, and immunity are included.

PHYSICIANS OF THE MAYO CLINIC AND MAYO FOUNDATION. A series of 635 biographical sketches with 611 portraits and including complete and accurate data concerning the professional life of each physician prior to January 1, 1926. Octavo volume of 578 pages. Philadelphia and London: W. B. Saunders Company, 1927. Cloth, \$7.00.

This volume is intended to provide in a brief form complete and accurate data concerning the professional life of each physician, who prior to January 1, 1926 had been officially connected with the Mayo Clinic or the Mayo Foundation for the period of one or more years. It is intended primarily for reference by these institutions, by ex-members of their staffs and by medical societies and libraries.

HUMAN PATHOLOGY, A Text Book, by Howard T. Karsner, M. D., Professor of Pathology, School of Medicine, Western Reserve University, Cleveland, Ohio. With an Introduction by Simon Flexner, M. D. 20 illustrations in colors and 44 black and white. J. B. Lippincott Company, Publishers. Price \$10.00, Philadelphia.

The present volume provides a well considered and successful compromise with regard to the almost endless number of topics demanding inclusion in a textbook on pathol-

ogy The work covers the fields of general pathology, pathological or morbid anatomy, pathological histology, functional or pathological physiology, and the general subjects of bacteriology and immunology. Greater detail in the special topics of physiology, parasitology, and immunology may be sought in textbooks devoted particularly to those branches of learning.

The presentation adopted is adequate and proceeds from the general to the particular. The discussion of debated or intricate subjects is sufficient to permit of definite understanding of the points at issue. The subject matter is remarkably complete and the text is lucid; while the illustrations, whether drawings or photographs, are precise and appropriate. In brief, the textbooks presents the broad subject of pathology, as now conceived and taught in this country and in Europe, in a manner suitable for the medical and biological student, as well as for the practitioner of medicine desiring to keep abreast with the ever enlarging subject of pathology. The references to special articles and treatises at the end of the chapters are well chosen, and they contain properly a preponderance of publications in English. The typography, illustrations, and bookmaking reflect credit on the publishers, just as the matter itself is of high credit to the author.

LECTURE ON INTERNAL MEDICINE, Delivered in the United States, 1926. By Knud Faber, M. D., Professor of Internal Medicine, University of Copenhagen, Denmark. With 43 figures and charts. Paul B. Hoeber, Publishers, New York. Price \$3.00.

The four lectures presented in this book were given during a visit of the author to the United States in February and March, 1926 at the invitation of American College of Physicians, followed by invitations from the College of Physicians, Philadelphia, and the Rockefeller Institute of Medical Research. Of special interest is the lecture on "The Intestinal Origin of Pernicious Anemia, and the Historical Outline of Medical Therapy."

PRACTICAL LECTURES ON THE SPECIALTIES OF MEDICINE AND SURGERY. Delivered under the auspices of the Medical Society of the County of Kings, Brooklyn, N. Y. Second Series 1924-1926. With 110 illustrations. Paul B. Hoeber, Inc. Publishers, 76 Fifth Avenue, New York. Price \$7.00.

This volume comprises a course of lectures given by men of recognized ability and teaching experience before a post graduate course arranged and financed by the county society. All phases of medicine and surgery are dis-

cussed.

The lecture on Cancer by W. S. Bainbridge, M. D., Periodic Health Examinations by Haven Emerson, M. D., and Why Is The Public Health Service by Surgeon General Hugh S. Cumming are some of the contributors.

TRANSFUSION OF BLOOD. By Henry M. Feinblatt, M. D., Assistant Clinical Professor of Medicine, the Long Island College Hospital, Brooklyn, N. Y.; Hematologist to the United Israel-Zion Hospital; Pathologist to St Peters' Hospital; Assistant Attending Physician to the Kings County Hospital; Author of Clinical Laboratory Medicine. Illustrated by twenty-four engravings. The Mac-Millan Company, New York, Publishers.

In this volume Dr. Feinblatt has presented a critical survey of the subject of blood transfusion as it stands to-day and has arranged the text in such a manner that each chapter becomes a ready reference on the several phases of the subject.

Blood transfusion is of such great therapeutic value and has come into such general use in the treatment of various acute and chronic lesions that a volume of this type will do inestimable good and be of great value, not only to the surgeon, obstetrician and medical man but to students, internes and residents, who must necessarily, at times, do much of the technical work.

The chapters of physiology, grouping and indications are clear and concise and should be read by every student of medicine.

THE SURGICAL CLINICS OF NORTH AMERICA (Issued serially, one number every other month.) Volume 7, Number 2 (Cancer Number—April 1927.) 231 pages with 113 illustrations. Per clinic year (February 1927 to December 1927). Paper, \$12; Cloth, \$16.00 net. Philadelphia and London: W. B. Saunders Company.

Admittedly, clinical postgraduate case-teaching really teaches best. The Surgical Clinics of North America bring to the doctor the actual amphitheatre instruction of America's leading surgeons, giving subscribers to these bi-monthly publications the benefits of the experience of a staff of teacher-surgeons perhaps not equalled by any postgraduate staff anywhere the world over. The first two numbers of the current series are devoted wholly to cancer.

Kentucky Medical Journal

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COUNTY SOCIETY REPORTS

Fayette: Resolutions on the death of Dr. William Sweeney Stucky have been passed by the staffs of the Good Samaritan and St. Joseph's hospitals and the Fayette Medical Society, of which he was the president. The resolutions passed by the two hospital staffs, in joint session, were as follows:

"Dr. William Sweeney Stucky, an honored and useful member of the staffs of the Good Samaritan and St. Joseph's hospitals has been taken from our midst by a sudden and fatal illness, and we his co-workers, feel that our hospitals, ourselves and the community have sustained a severe and heavy loss.

"Dr. William Sweeney Stucky was generous with his time and knowledge in the care of the poor, who will not only miss his professional attention, but the charm of his personality.

"We join with others in the sorrow of his bereaved family.

"Be it resolved that these Resolutions be spread upon the minutes of the staffs of the Good Samaritan and St. Joseph's hospitals, a copy be sent to the family, to the Kentucky State Medical Journal and to the daily papers.

Charles C. Garr,

W. H. McLean,

W. S. Wyatt,

"Committee."

Medical Society's Resolutions.

The Fayette County Medical Society met in called session Friday, June 10 at 5 o'clock at the Good Samaritan hospital, and adopted the following resolutions:

"The members of the Fayette County Medical Society, as well as the entire community, were profoundly shocked and grieved to learn of the sudden death of its president, Dr. William Sweeney Stucky, following a brief illness of only 18 hours.

"Dr. Stucky, the son of Dr. and Mrs. J. A. Stucky, was born in this city on February 8, 1884, and spent his entire life here except those few years spent in equipping himself for his life's work.

"He was a graduate of Bethany College of West Virginia, receiving the degree of bachelor of arts from the institution in 1904. The following autumn he entered the University of Michigan where he received his degree in medicine in June 1908. He then spent two years at the Post-Graduate Hospital at New York as an interne, following by an internship at the Manhattan Eye, Ear and Throat hospital of the same city, at which institution he equipped himself to

practice his specialty of the eye, ear, nose and throat.

"Upon returning to Lexington during the year 1911 he associated himself with his father and through his personal charm and efficient work soon established a lucrative practice which he enjoyed until the time of his death.

"He was a member of the American Academy of Ophthalmology and Otolaryngology, the American Medical Association, the Southern Medical Association and the Kentucky State Medical Association and its affiliated organizations. For many years he has been a member of the staffs of both the local hospitals and an attending physician to the clinic of the Public Health Nursing Association in all of which capacities he gave generously and unstintingly of his time and service and endeared himself to both the well-to-do and the poor and alike to his associates and to his patient. It is the pleasure of this society that a copy of this memorial be spread upon its minutes and that copies be sent to his bereaved family, to his parents, to the Journal of the Kentucky State Medical Association and to the daily papers.

"It is the further pleasure of this society that we stand for a few moments in reverence to the memory of our devoted president.

Ernest B. Bradley,

Eam B. Marks,

L. C. Redmon,

Committee.

Nursing Association Resolutions.

The board of directors of the public Health Nursing Association has adopted the following resolutions:

"Whereas, our Almighty Father has called to his eternal reward Dr. William S. Stucky; and

"Whereas Dr. Stucky has been for many years a faithful and indefatigable worker in the charity clinics of the Public Health Nursing Association, giving unstintedly and ungrudgingly of his time, his skill and his strength in unremitting service to the poor of this community;

Therefore, be it resolved by the board of directors of the Public Health Nursing Association that the association, the medical profession of Lexington, the general public and the needy sick of Lexington have suffered an irreparable loss in the untimely passing of this highly skilled and unselfishly devoted physician;

"And be it further resolved that copies of these resolutions be spread upon the minutes of this association, sent to the local press and transmitted to the bereaved family, with the deepest sympathy of the board of directors of the Public Health Nursing Association.

Mrs. George K. Graves,

S. D. Breckinridge,

Mrs. James C. Rogers,

Mrs. Clinton Harbison,

John W. Scott.

NEWS ITEM

Dr. J. F. Jones of Mt. Sterling writes asking that the attention of the physicians of the State be called to one Jodie Brown who formerly lived in Estill County, four miles from Irvine on the river. Brown claimed to be a son-in-law of Doctor Martin who owned the farm and that he had been injured in a railroad wreck.

He passed three cold checks on Doctor Jones and he desires that the profession be warned as to this man's activities. If he attempts to pass cold checks on any other doctor, Doctor Jones will be glad to be notified as he will assist in securing his arrest.

Pollinosis—"Hay Fever": Pollen-free air to breathe is one solution of the problem of pollinosis, but a costly one. Most hay fever sufferers can't afford it. For them it is a case of the mountain not coming to Mahomet, and Mahomet not going to the mountain. The *status quo* prevails.

Fortunately these unfortunates have a remedy in specific immunization the only question is, When shall it be done? And, incidentally, What pollen extract shall be used in the immunizing process?

It is none too early right now to start the immunizing treatment, which requires about six weeks for completion—fifteen injections at intervals of three or four days.

As to choice of pollen extracts: Since these extracts keep better in concentrated form, they are offered in this form by some manufacturers, notably by Parke, Davis & Co., who advertise their product elsewhere in this issue.

Parke, Davis & Co. offer an illustrated book on hay fever. Physicians are invited to write for it.

THE GOLF TOURNAMENT.

The members of the Daviess County Medical Society and the Ladies Auxiliary have arranged a very delightful tournament for every member of the association, their wives and daughters.

The tournament will begin Saturday preceeding the meeting and continue through Wednesday. All score cards must be handed to the committee by that time and the prizes will be awarded preceeding the opening of the Wednesday evening program. So many prizes have been received that almost all the players will secure one.

For any information write to Dr. W. O. Rash, Owensboro, Chairman of the Golf Tournament.

Be sure to bring your attested handicap signed by your club president.



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Being the Journal of the Kentucky State Medical Association

Published Monthly under Supervision of the Council

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No. 10

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KENTUCKY MEDICAL JOURNAL

BEING THE JOURNAL OF THE KENTUCKY STATE MEDICAL ASSOCIATION

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BOWLING GREEN, KY., OCTOBER 1927

No. 10

EDITORIAL

MILLION DOLLAR CAMPAIGN FOR NORTON INFIRMARY.

The Norton Memorial Infirmary plans a campaign for a million dollar building, beginning early in October.

This Hospital was founded in 1886 under the auspices of the Episcopal Church and a bequest from John N. Norton. Drs. Yandell, Scott, Roberts, Cartledge, Marvin and others were prominent at that time in its activities.

The institution has never had a large endowment. At present the total endowment, not including the buildings, amounts to \$63,000, the total investment, buildings included, about \$500,000.

Throughout the forty years it has been practically self-supporting and has done a very large amount of charity, always taking care of the inmates of orphanages and homes. It contributed to the relief of a large number of crippled children prior to the formation of the Crippled Children's Society.

It has had one of the best training schools in the country with a high standard of education for nurses. This school has about four hundred graduates who are serving the public faithfully and well. The institution has 110 beds at present, but this number does not supply the demand.

Your heartiest support is urged for this effort to continue the good work done by this institution.

J. G. S.

DR. GEORGE T. FULLER.

It is with sincere regret that the Journal notes the death of Dr. George T. Fuller at his home in Mayfield on July 22, 1927. Doctor Fuller was one of the really great men with whom we have had the privilege of association. We had attempted to prepare an appreciation of his services when we received from the distinguished Dean of the Eclectic Medical College of Cincinnati, a biographical sketch which he has printed in the October issue of the Eclectic Medical Journal. It is a pleasure to reproduce it here.

OHIO VALLEY MEDICAL ASSOCIATION

This Association has honored the profession of Kentucky by electing as its President and presiding officer, Dr. Emmet F. Horine of Louisville, Ky.

The annual meeting will be held in Evansville, Ind., November 9-10, 1927, with headquarters at the Vendome Hotel. Every doctor in Kentucky is extended a cordial invitation to attend this meeting.

For any information write the Secretary, J. F. Wynn, 712 S. Fourth St., Evansville, Ind.

MEASLES SERUM.

The Laboratories of the State Board of Health have just secured a fresh supply of convalescent measles serum from a recently recovered case of measles.

This serum will be supplied at a very small cost. Those doctors who have patients who are unable to pay, may obtain the serum without any expense.

Measles serum has proven its value in the recent epidemic at Berea, so much so that no doctor should hesitate to use it in any case of measles where it is indicated especially those cases where complications are threatened.

AT OWENSBORO

Just as the Journal was going to press the Owensboro meeting closed, consequently, a detailed report of the meeting cannot be given in this issue of the Journal.

Dr. John H. Blackburn of Bowling Green, was elected President, and from the successful work that he has been doing in the Third District we are sure that he will lead our Association to greater efforts in preventing disease and in stimulating the physicians to take an active part in the organization and further the welfare of this Association.

The physicians of the Daviess County Medical Society, with true southern hospitality, entertained the physicians elaborately.

OFFICIAL ANNOUNCEMENTS

Minutes of the Eye, Ear, Nose and Throat Section of the Kentucky State Medical Association, Sixth Annual Session, at the Seelbach Hotel, Louisville, May 12th, 1927, with a registration of sixty two.

MORNING SESSION

Section called to order by Dr. Adolph O. Pfingst, President at 10:15 A. M.

Minutes of the 1926 meeting read and approved.

The following announcements were then made by Dr. Octavus Dulancy, Secretary.

The annual banquet will be in the Red Room of the hotel at 7:00 P. M. Cost of member's tickets included in their annual dues. Members may bring guests if desired, physicians or laymen, by paying \$3.00 for each extra ticket.

Section members are invited to luncheon with Dr. Pfingst in the main hotel dining room at 1:00 P. M.

The address of Dr. Wm. C. Finnoff will be delivered at 8:00 P. M. following the banquet. Dr. Finnoff will visit Mammoth Cave, and has offered to act as chaperone for members who desire to accompany him on the trip.

Clubhouse tickets for the Derby, May 14th, have been reserved for those who wish to attend. Cost of each ticket \$8.80.

Upon request rooms will be secured for any members who have not already found accommodations.

Dr. R. C. Lyneh, New Orleans, telegraphed expressing regret that he cannot attend the meeting on account of flood conditions.

Application of the following gentlemen for membership have been approved by the Councils:

Dr. C. Dwight Townes, Louisville,
Dr. M. H. Walker, Owensboro,
Dr. T. H. Singleton, Bowling Green,
Dr. W. A. Poole, Lexington,
Dr. Max Bernstein, Louisville,
Dr. Edmond D. Wells, Louisville.

These are to be voted upon at this meeting.

Applications have been received from Dr. C. W. White, Henderson, and Dr. W. J. Greenstein, Lexington, which must be held until the 1928 meeting.

Owing to lateness of the hour, it was moved and carried that balloting on election of new members be deferred until the afternoon session.

CASE REPORTS.

Dr. Robert Walter Bledsoe, Covington, reported a case of Perithelioma of the Orbital Cavity in a Boy aged Eleven Years, with exhibition of specimens and photographs. Discussed by Drs. Finnoff, Wynn, Pfingst, and closed by Dr. Bledsoe.

Dr. Edmond D. Wells, Louisville, described a method of Tonsil Diagnosis by the Measurement of the Absorptive Power of the Tonsils, and mentioned one hundred and forty-five cases investigated. Discussed by Drs. Williams, Allen, Beck, Bledsoe, Dabney, Hall, Marks, Stucky, Griffith, Watkins, Doyle, Dean, and closed by Dr. Wells.

Dr. A. L. Bass, Louisville, reported two cases: (1) Acute Bilateral Mastoiditis in an Infant Six Months Old; (2) Hemorrhage From the Antrum of Highmore. Discussed by Drs. Dean, Watkins, Cowley, Griffith, Heitger, Offut, Hall, and closed by Dr. Bass.

Dr. S. B. Marks, Lexington, related the history of a patient with Cerebellar Abscess of Otitic Origin. Discussed by Drs. Spurling, Hall, Stucky, Drake, Offutt, Heitger, Dean, and closed by Dr. Marks.

As this completed the morning program, the section adjourned at 12:30 for luncheon with Dr. Pfingst at one o'clock.

AFTERNOON SESSION.

Section called to order by the President, Dr. Pfingst, at 2:00 P. M.

By permission Mr. Jones, of the L. & N. R. R., stated that a special car had been arranged for members who desired to attend the A. M. A. meeting at Washington, D. C. Train leaves Louisville at 1:00 P. M. Sunday and arrives in Washington at noon Monday.

The six applicants whose names were presented at the morning session were admitted to active membership by unanimous vote.

The following officers for 1928 were elected by acclamation:

President, Dr. J. A. Stucky, Lexington.
Vice-President, Dr. W. P. Drake, Bowling Green.

Treasurer, Dr. S. B. Marks, Lexington.
Secretary, Dr. Walter Dean, Louisville.

Upon motion of Dr. Stucky, which was duly carried, it was authorized that a telegram be sent to Dr. Lyneh, New Orleans, expressing regret of the section that he could not attend the meeting, and extending to him and the medical profession of New Orleans and the South sympathy and best wishes of the members.

Dr. C. W. Dowden, Louisville, read a most interesting paper on Cerebral Sclerosis, which was discussed by Drs. Stucky, Dabney, Finnoff, Heitger, and in closing by the essayist.

Dr. R. H. Crowley, Berea, presented a paper with the title: "After the Examination, What Lenses Shall We Prescribe?" Discussed by Drs. Heitger, Williams, Baker, Drake, Dean, Beck, DeWeese, and in closing by Dr. Cowley.

Dr. Gaylord C. Hall, Louisville, read a

paper on "The Analysis of Endoscopic Cases," which was discussed by Drs. Marks, Deen, and in closing by the essayist.

The section then adjourned to reconvene in the banquet room (Red Room) at seven o'clock.

EVENING SESSION.

Section members and guests, total of about seventy, assembled in the Red Room for the annual banquet about 7:30 P. M., with Dr. Wm. C. Finnoff, of Denver, Colorado, as the guest of honor.

At the conclusion of an elaborate dinner, about 8:30 P. M., the section was called to order by the President, Dr. Pfingst.

After delivering a brief address as retiring President, Dr. Pfingst introduced Dr. Finnoff who presented a splendid paper on "The Differential Diagnosis in Cases of Tuberculosis of the Eye." Numerous lantern slides were shown to illustrate his remarks.

Dr. Irvin Abell, President of the Kentucky State Medical Association, then addressed the section. He complimented the members very highly on the excellent work accomplished since organization of the section.

The final address was made by the President-elect, Dr. J. A. Stucky, Lexington. He urged the members to strive for greater future achievements, and promised his encouragement, co-operation and earnest support during the coming year.

There being no further business the section then adjourned until 1928, the meeting to be held at the time and place selected by the committee.

Octavus Dulaney, Secretary.

Tuberculosis and Poisoning with War Gas.—

Sergeant rarely observed tuberculosis among the immediate complications of poisoning with war gases. On the other hand, he noted that the tardy occurrence of tuberculosis in war veterans is more and more frequent every year. The author ascribes the fact to chance factors which favor the awakening of the disease, and does not connect it with gas poisoning. Of forty-eight veterans of the world war recently re-examined, twenty-two have a history of grave gas poisoning. They present chronic lesions of the respiratory organs; so far, none suffers from tuberculosis. Twenty-six have tuberculosis, which developed from three to eight years after the occurrence of an insignificant gas poisoning. The respiratory lesions of the first group appeared under the form of chronic bronchitis, bronchopulmonary, sclerosis, emphysema, bronchiectasis or asthma-like dyspnea. So long as tubercle bacilli are not found in the sputum, or inoculation of guinea-pigs with the sputum is negative, the lesions are not considered as tuberculous.

ORIGINAL ARTICLES

PERITHELIOMA OF ORBIT: CASE REPORT.*

By ROBERT WALTER BLEDSOE, M. D., F. A. C. S., Covington
(Author's Abstract)

Patient, R. W., a male, aged eleven years, a typically healthy country boy. Date of first observation April 6th, 1926.

Family history: Mother died six years ago, cause unknown. Father crippled from fracture of leg. Nothing else of interest.

Personal history and complaint: No previous illness, no operations. "Right upper eyelid swollen and somewhat inflamed for the past two months; but at no time had there been any pain, nor was the eyeball inflamed."

Examination: Complete ptosis right eyelid which was enlarged and reddish-purple in color. Skin adherent to underlying hard, nodular mass which occupied upper half of orbital cavity and extended under supra-orbital rim. Near inner extremity of eyelid was yellowish elevation 4x4 mm. over which thinned skin resembling abscess. Vision right eye 20-70, motility of eyeball normal, media clear, fundus normal.

Normal fundal blood vessels excluded aneurism. Small stab incision in yellowish elevation. No pus and small amount of blood eliminated abscess and angioma. Inability to reduce mass by pressure precluded possibility of meningocele. Roentgenogram showed sinuses normal. Wassermann blood reaction and urinalysis negative.

Patient admitted to hospital April 19th, 1926. The orbital tumor developed rapidly, causing inner half of upper conjunctiva to appear as a reddish-purple bulging mass between eyelids and extending from inner canthus to center of cornea which it overlapped.

First operation May 3rd, 1926. Curved incision through shaven brow from outer extremity to side of nose on level with inner canthus. Encapsulated mass removed by blunt dissection without rupturing capsule; hemorrhage slight; growth separated from conjunctiva without perforation. Tumor originated from periosteum of orbital roof. It was pedunculated, nodular, 2x4 1-2x2 4-5 cm., and weighed 200 grains.

Microscopic and pathologic diagnosis: perithelioma of the orbit. Arrangement of blood vessels and cellular elements typical.

Two months later vision right eye 20-30. Examination disclosed evidence of recurrence of orbital tumor which thereafter developed

*Read before the Eye, Ear, Nose and Throat Section of the Kentucky State Medical Association, Louisville, May 12th, 1927.

rapidly, and patient readmitted to hospital.

Second operation August 31st, 1926, through original incision. Tumor more adherent and dissection more difficult than at primary removal. Growth larger, 3x4x5 cm., weighed 260 grains, and showed increased malignancy in that fusiform cells penetrated capsule everywhere. Microscopic and pathologic diagnosis: perithelioma of orbit.

The tumor recurred promptly, by November 1st approximating size before operation August 31st, and continued to grow rapidly. Vision of right eye was soon completely destroyed and patient suffered intense fronto-temporal pain which could be controlled only by morphine. Progressive loss of weight and strength rapidly ensued.

Further operative intervention deferred in compliance to patient's wishes, and also because of conviction that the end was not far distant. However, pain and suffering increased and another operation was performed to afford relief.

Third operation December 17th, 1926. Complete exenteration of orbit including lachrymal gland and periosteum. There was a small erosion of supra-orbital plate exposing dura, another on orbital floor leading into antrum, and still another into ethmoid cells. Relief from pain was complete and morphine discontinued. However, recurrence of tumor was immediate. Within two weeks the orbital cavity was filled even with the eyelids. The growth continued to enlarge rapidly, and an occasional hemorrhage therefrom was followed by more frequent and severe ones.

During second week in January, 1927, fronto-temporal pain returned with increased violence again necessitating morphine. Extreme sensitiveness to light and sound required placing patient in semi-darkened room. Loss of strength and flesh rapid, hemorrhages from orbital mass increased, and extension to nose blocked right nasal chamber.

February 1st, 1927. Tumor larger than ever, now protruding 1 1-2 inches beyond normal corneal location, and involving subcutaneous tissues of temple and supra-orbital region. Death occurred February 12th, 1927, following violent hemorrhage from orbital mass.

Necropsy report: Tumor mass protrudes 1 3-4 inches beyond right eyelids. Subcutaneous infiltration raises skin 1-2 to 3-4 inch in right frontal region to 1 1-2 inches above supraorbital ridge, and extends from center of nose outward beyond outer canthus. Frontal lobe of brain densely adherent to tumor which filled orbital cavity, antrum and right nasal chamber, there being no vestige of bony partitions separating any of these cavities from the

others.

Frontal lobe of brain contained mass size of closed fist composed of conglomerate closely packed discrete bodies varying in size from pea to hazelnut. Macroscopically they are identical to snail shells, apparently each mass being rolled upon itself. Microscopically they are identical to sections of the perithelioma growths previously removed. Evidently they are the result of direct extension through dura and not of metastatic origin. No metastases found in other organs.

The patient was under observation ten months during which period he was operated upon three times. Each recurrence of the tumor showed definite signs of increased malignancy.

Both radium and roentgen-ray therapy were employed without beneficial effect.

So far as can be determined from search of the literature, only four other cases of perithelioma of the orbit have been recorded, and these were in adults.

DISCUSSIONS

Wm. C. Finnoff, Denver: The paper read by Dr. Bledsoe is one of particular interest because perithelioma is an exceedingly rare type of orbital tumor. The great majority of orbital neoplasms arise either intra-durally from the optic nerve as gliomas, or extra-durally in the orbital contents. The extra-dural is the most common type of orbital tumor, and may be sarcoma or one of the various benign growths. Rarely do we encounter malignant metastatic tumors in the orbit.

Perithelioma is described as having a very peculiar histologic structure. Ewing, who is one of the most outstanding authorities on neoplastic diseases, states that there is undoubtedly a perithelial tumor. He states that perithelial tumors arise from the perivascular lymph spaces around the blood vessels and the growths are essentially composed of endothelial cells. It is difficult to differentiate perithelioma from angiosarcoma, or, on the other hand, from endothelioma. The distinguishing feature is the cell itself, which is polyhedral resembling the endothelial cells around the blood vessels in the perivascular lymph spaces. The vascular character of the tumor itself is also a differential point.

Perithelioma must be differentiated from sarcoma and angiosarcoma. In the sarcomata the cells are usually spindle-shaped. Some authors claim that peritheliomata should be classified as sarcomata, while others hold that they are purely endothelial in character. If the tumor is endothelial in type, blood vessels are not the predominating factor. The diagnosis must be made on the presence or absence of blood vessels and the position in which the tumor arises from the vessel wall.

As Dr. Bledsoe has said, the diagnosis of a

perithelial tumor is often difficult clinically. The tumor is usually only locally malignant, although this is not the rule. The patient may show signs of cachexia and the other typical changes occurring in all types of malignancy.

The histologic characteristics of perithelioma are the polyhedral cells surrounding the blood vessels without the regular arrangement that is so frequently seen in endothelioma. In the later stages it undergoes degeneration, hemorrhage is frequent, and hyaline change often occurs. When hyaline degeneration supervenes it is always in the late stage.

The tumor cells frequently become cylindroid in their formation. The histologic aspect of the tumor then resembles cylindroma. These changes in morphology depend upon the arrangement of the cells. The classification of tumors is one that has not been definitely agreed upon. Some authors classify malignant tumors as epithelial in origin, others classify certain types of sarcoma as primarily epithelial growths. Pathologists are not in accord in this matter.

The report of a case of this kind is of great interest because it brings before us the so-called typical type of tumor—perithelioma. These tumors were first described by Ewart in connection with changes around the perivascular spaces in the brain. They have been described as occurring in the various glandular structures, i. e., the salivary gland, testis, pituitary body, etc.

It would be interesting to study serial sections of this mass to determine where it had its origin; that is, whether its origin was from the lachrymal gland or from some of the orbital structures.

J. J. Wynn, Louisville: There is nothing I can add to what has already been said concerning perithelioma, as I have had no personal experience with such cases. Based upon investigation of the literature it seems there is some disagreement in regard to perithelioma being a separate tumor, or whether it belongs under the classification of angiosarcoma.

Dr. Bledsoe has given us a very interesting report.

Adolph O. Pfingst, Louisville: I would discuss this case from the standpoint of the nomenclature of this class of neoplasm.

It has always seemed to me that additions to the terminology of new growths based on the morphology of the tissue is unnecessary and misleading, and that the classification according to the histogenesis of the tissue should be more strictly adhered to. In other words, I do not believe because as in this case the tumor cells massed themselves around the blood vessels to form a fibrillar arrangement or as in other instances where through a hyaline degeneration tubular formation occur (cylindroma) a name should be given such tissue based upon this particular morphology.

Everything would indicate in Dr. Bledsoe's

case that the neoplastic tissue developed outside of the blood vessels, the polyhedral cells indicating a most probable origin in the endothelium of the perivascular lymph spaces, which would mean that we are dealing with a perivascular endothelioma. According to pathologists in this kind of endothelioma, which is described by some as a type of its own under the name perithelioma, the polyhedral cells grow in many layers around the blood vessels. Then on account of lack of nourishment the remote cells break down and absorb leaving the vessels surrounded by the remaining cells and separated by spaces left by the absorption of necrosed cells and thus the characteristic fibrillar arrangement is brought about.

An interesting clinical feature of the essayist's case is the fact that the original growth was surrounded by a capsule of white fibrous tissue. Whenever we find this and are able to remove the neoplasm in toto we are naturally more sanguine regarding the danger of recurrence. Under the circumstance the rapidity of the recurrence in this case is of interest. I think Dr. Bledsoe handled this case in a scientific manner. It occurs to me that after the orbit had been entered the cavity should have had radium treatment.

Robert Walter Bledsoe (in closing): It is quite true that the type of growth under consideration has heretofore been referred to as an angiosarcoma, and under that classification the tumor I have presented might be called an angiosarcoma. Within recent years, however, the nomenclature has been changed in the attempt to find a more definite designation, and the tumor is now called perithelioma.

Dr. Pfingst emphasized one point, and I am glad he did, and that is in regard to the capsule: After completing the primary operation, removing the tumor mass without rupturing its capsule, I felt very much encouraged as to the prognosis. I believed this was a case in which a cure would be obtained, and was really dumfounded a short time afterward when a small area of the returning growth was discovered. The second mass removed was also encapsulated as stated in the paper.

For the information of Dr. Pfingst, I wish to say that the roentgen-ray and radium were used alternately in this case by an expert radiotherapist, and that fact was stated in my paper. These agents were employed alternately at the suggestion of the man who applied them, and they were used until he became satisfied no benefit could be thereby accomplished.

ACUTE MASTOIDITIS, BILATERAL, IN AN INFANT SIX MONTHS OLD WEIGHING 8 POUNDS, 6 1-2 OUNCES.

HEMORRHAGE FROM ANTRUM OF HIGHMORE. CASE REPORTS.*

By A. L. BASS, Louisville.

Case I.—November 16, 1926, Dr. Dean called me by phone saying that he had a case for my senior operative clinic; that it was a baby with acute middle ear involvement; that the patient, a baby, was a very poor risk, and he was doubtful if it would stand much operative work. He stated that Dr. Dabney had also seen the case.

The next afternoon, seeing the patient for the first time when on the operating table, I obtained the following history: Baby, male, six months old, weighing 8 lbs. 6 1-2 oz., admitted from the Kentucky Children's Home, November 13, 1926. About two or three weeks before the child developed a diarrhea and two or three days afterward both ears began to discharge. The child's feeding had been mostly Eagle brand and certified milk. From objective examination you can picture the appearance of a child six months old, weighing 8 lbs. 6 1-2 oz. as being markedly emaciated and dehydrated. Examination of ears showed both canals full of pus. Upon wiping pus away, the left drum had a perforation posterior inferior sufficient for good drainage, discharge was pulsating, there was no sagging of posterior canal wall or bulging of drum. Right drum had perforation posterior inferior, there was moderate sagging of posterior canal wall and bulging of drum posterior superior.

As the right side was the worse upon examination I thought it best to look at it first. Expecting to make a small incision and just drain the antrum, I was astonished as well as surprised to find a well developed mastoid cavity which was about one and a half centimeters anterior posterior and two centimeters superior inferior. The cell walls were broken down and the cavity was filled with pus and granulations.

After finding such an involvement in the right side we decided it would certainly be advisable to open the left mastoid and found it in practically the same condition as the right; same sized cavity filled with pus and granulations. I was about twenty minutes doing the right side; knowing what to expect, I saved five minutes on the left side; both operations consuming about thirty-five minutes. Both wounds were nearly closed save a small gauze wick soaked with 2% solution of mer-

curochrome was left in lower edge of incision.

The child stood the anesthetic well and very little chloroform was used. Laboratory report of specimens from both mastoid cavities was streptococci and gram positive diplococci. The child's temperature from time of admission until operation ranged from 99° to 101° F.

Relative to treatment prior to operation: The baby was unable to tolerate food well. November 13, 1926, 200 cc. normal saline was given intraperitoneally. November 15, 1926, 225 cc. normal saline was given intraperitoneally. November 17, 1926, double mastoid operation was done which I have described; that evening the temperature rose to 102° F. 8 p. m. the next morning it was 100° F. November 18, 1926, using a student as donor, 100 cc. of blood was withdrawn and titrated, then 88 cc. given to patient through the anterior fontanelle. The baby appeared to stand the transfusion well and left the operating room in good condition. That evening at six o'clock temperature was 103° F., next morning it was 99° F. During the 19th the temperature ranged from 99° to 101° F. Notation on chart was: "child tolerates breast milk fairly well, is not having so many loose stools, looks much better following transfusion." I dressed the wounds that day which seemed to be doing nicely. I inquired about the swelling of the scalp which was rather noticeable and was informed of the transfusion. November 20, 1926, notation: "Patient quite dehydrated; 100 cc. normal saline and 90 cc. 10% glucose solution was given intraperitoneally, that evening 150 cc. normal saline was given intraperitoneally. Patient has large swelling of scalp probably due to cerebro-spinal fluid leaking through transfusion puncture." Temperature that day ranged from 103° F. at 8 a. m. to 104° F. at 6 p. m. It gradually climbed until the baby's death the next morning at 11:15 o'clock when it was 106° F.

The interesting features in this case to me are: 1st. the baby weighing 8 lbs. 6 1-2 oz. at six months. 2nd: the well developed mastoid cavity for such a poorly nourished under weight infant. It would have been surprising enough to find such a cavity in a child of normal weight for that age.

Gray says: "The tympanic antrum is a cavity of considerable size at the time of birth; the mastoid air cells may be regarded as diverticula from the antrum and begin to appear at or before birth; by the fifth year they are well marked, but their development is not complete until toward puberty."

Cunningham: "At birth the lateral wall of the antrum has a thickness of 1-2 mm., but by the ninth year this has increased to about 10 mm. Coincident with the growth of the mas-

*Read before the Eye, Ear, Nose and Throat Section of the Kentucky State Medical Association, Louisville, May 13th, 1927.

toid process the mastoid air cells are developed downward and backward as diverticula from the antrum and present the greatest possible variations in different skulls."

Dench: "In the infant at birth the mastoid is but poorly developed, consisting usually of but a single cell, the antrum. It must be remembered, however, there is a very large pneumatic space in immediate relation to the tympanic cavity, as the vault in the child is nearly as large as in the adult."

Kopetzky: "The antrum is fully developed in the newborn, but no mastoid process is present at this time. The mastoid cells commence their growth from the antrum progressing at first posteriorly and later toward the protuberance. At the end of the first year pneumatization begins. At the end of the third year the mastoid process may already resemble the adult type. In a case operated upon, the writer observed a mastoid process in a child of two years which in no way differed from the adult type."

Case II.—Miss A. L. aged 43, came into the office about 11 a. m. November 29, 1926 with the following history:

Three days before coming to me she had a hemorrhage from nose and was treated by another doctor. She had no further trouble until that morning, when nose started to bleed again. Previous to this epistaxis her health had been perfect; said she had never had a doctor that she could recall.

Family history: Father died, aged 76. Doctor said cause old age. Mother dead, age 63, cause influenza. Brothers, three living and well.

Examination: The hemorrhage was from left side and rather active. Nasal inspection showed bright red blood coming from beneath anterior tip of left middle turbinate, and during normal expiration a fine spray could be seen just beneath anterior tip of middle turbinate. There was no bleeding point I could discover otherwise.

Patient's nose was packed with 1-2 inch, 5% iodoform gauze, filling the left nasal cavity with moderate pressure. She was to take C. R. C. tablet that evening, magnesium sulphate next morning, 2 drams elixir chlorocalcium three times daily.

That evening at 8 p. m. patient's sister called me by phone and said her sister's nose was bleeding again and had been for two hours. Told her to bring her sister to office in thirty minutes. The hemorrhage coming from the middle fossa made me think of the antrum, as I remembered having read a case report of hemorrhage from the antrum, but did not remember where or when I read it.

An x-ray examination made of her sinuses that morning showed her left antrum cloudy, which you can see in the pictures. That even-

ing when she returned to office I found her left antrum transilluminated dark. Upon irrigating same there was fresh blood and between one and two drams of clotted blood. The irrigation was done with warm boric acid solution. The nose was repacked more completely and firmer than that morning.

The patient's sister called me by phone that same evening about 12 o'clock saying her sister's nose had been bleeding for about an hour. I was unable to appreciate how her nose could be bleeding much with the pack that I had placed that evening; and when I arrived at her house about 1 a. m., she informed me that it had stopped bleeding just prior to my arrival. I looked into pharynx and saw there was no bleeding, then returned home, requesting her to report at office that morning, when I irrigated her antrum to find blood but not the bright red it was about 12 hours before. I used the irrigation rather warm thinking it would have some hemostatic effect. Her nose was repacked with cotton. That morning her clotting time was six minutes, Hg., 65%, R. B. C., 3,320,000, W. B. C., 10,800, blood pressure 130-108. Wassermann was negative.

The next day, December 1, antrum was irrigated; bloody but not as fresh as day before. Nose was repacked with cotton and patient was told to skip a day before reporting at office, but the next morning (Dec. 2) her nose began bleeding and she came to the office. As I was out of town she was sent to Dr. Hall who treated her and left in a light pack.

That same evening about 8 o'clock her sister called me and said her sister's nose had been bleeding for about two hours. Had her to meet me at the office again, antrum was irrigated with warm boric acid solution and nose packed with cotton. She reported at office next morning and fresh blood continued to persist in its presence; and I was getting to the point where I wanted some relief as well as the patient. I was about to decide the best thing to do was to remove a good portion of the lateral wall and pack the antrum for about 24 to 48 hours, when the thought occurred to me to use thromboplastin. So, after irrigating the antrum, a pledget of cotton was placed twist middle turbinate and lateral wall to block the ostium and the antrum was filled with thromboplastin (for local use only). Then the opening beneath inferior turbinate which was made by puncturing for irrigation was covered with cotton pledgets. The next morning when the antrum was irrigated there was no fresh blood and there had been no bleeding. The antrum was again filled with thromboplastin and nose packed as before.

The thromboplastin was used the third and fourth of December, the fifth and sixth day

after seeing her. She continued to report at office fifth, sixth, seventh, eighth and tenth for observation, without any further trouble. On January 16th, 1927, another x-ray picture was made which showed the left antrum practically clear but slightly cloudy compared to the right. Another picture made last week (May 4th) shows antrum clear.

DISCUSSIONS

Walter Dean, Louisville: This baby was in a desperate condition when Dr. Bass operated its mastoids. It seemed to suffer no shock from the operations and did improve generally for a day or two.

The anatomical findings were interesting. The mastoid antra were the largest I have ever seen in an infant. We know that babies have relatively large antrums and that they are often larger than they remain in adult life.

Speaking to Dr. Bass' second case, will say that I have never seen a spontaneous hemorrhage from the accessory sinus of the nose. Several years ago I prepared a paper on epistaxis. Finding no mention of spontaneous hemorrhage from the sinuses in our text books, I wrote to Skillern to ask if it occurred. He replied that he had not seen it.

Shelton Watkins, Louisville: I, too, was present at the operation in the first case reported by Doctor Bass and was surprised at the development of the mastoids. In the great majority of cases the antrum is the only cell in the mastoid at birth and the development of other cells begins at the end of the first year. In this case the mastoid was quite large for the age of the patient and there were several definite cells around the antrum. Dr. Bass was unfortunate, after performing a successful operation, that the child did not survive the intestinal infection.

This case raises the question that has been discussed by Marriott and his associates in St. Louis during the last few years. They recommend, as a routine, operation on the mastoid in infants suffering from "summer diarrhea". This I think, is radical. I do not believe this operation should be performed in every case. I feel that incision of the tympanic membrane should first be made, provided, of course, there are signs of otitis media and, I believe in most cases this is sufficient. If not, in the more serious cases, mastoidectomy may be tried. It can be done quicker under light anesthesia.

This is not a new idea. Several authorities recognized it years ago. Macewen, in his famous book on "Pyogenic Infective Diseases of the Brain and Spinal Cord," published in 1893, mentions it. He believes that most of the absorption is from pus that is swallowed, which drains in some cases through the Eustachian tube. He states, also, that in other cases toxemia is apparently responsible for the intestinal symptoms. Alexander in his text book quotes Prey-

sing, who thinks the absorption of toxins is the factor that upsets the digestive tract. Both authorities consider it an uncommon complication.

In regard to the second case, spontaneous hemorrhage in the maxillary sinus is extremely rare. I would like to ask Doctor Bass if it were associated with the menses. Possibly it was a vicarious form of menstruation.

R. H. Cowley, Berea: I would like to mention the fact that about two years ago I saw a child six months old apparently in perfect health. The first sign of trouble the mother noticed was that one ear "hung down away from the child's head," and there was a large swelling behind the ear. The mother was a very intelligent woman and took excellent care of her children. At operation the mastoid proved to be about the size of the one Dr. Bass has described. It was entirely necrotic and filled with pus and debris. There were no other symptoms, the drum membrane was plainly visible, and there was no evidence of middle ear trouble. I incised the drum and no pus was liberated. The mastoid was three-fourths of an inch long and half an inch wide.

I merely mention this case to emphasize the fact that when a child is sick it is a good idea to examine the ears. In this case the swelling was the first symptom either general or local.

D. M. Griffith, Owensboro: Seven years ago I performed bilateral mastoidectomy upon a child less than four months old with recovery. Two years ago I did mastoidectomy on a child eight months old. The baby had persistent diarrhea for which the family physician could find no cause. There were no definite symptoms referable to the ears, but one day the grandmother noticed the child frequently put his hands on the head. I was called and made the diagnosis of mastoid abscess and advised operation, but the family hesitated. The next day Dr. Shelton Watkins, of Louisville, was in Owensboro and I had him see the child with me. He agreed that mastoidectomy might be beneficial. Operation was performed the following day, and within forty-eight hours the diarrhea was greatly relieved and shortly disappeared entirely. The child had a well developed mastoid antrum. That was two years ago. Now we know that mastoidectomy is frequently performed in cases of persistent diarrhea for which no cause can be found and which cannot otherwise be controlled.

Joseph D. Heitger, Louisville: A number of years ago when doing some work on osteosclerosis Wittmaack was surprised to find quite frequently a certain type of involvement of the middle ear in infants. This was not an infection but a type of irritation supposed to be due to meconium or liquor amnii getting into the ears through the eustachian tube. This form of mechanical irritation resulted in certain changes in the myxomatous tissue of the middle ear. In

general it was described in three forms: hypertrophic, and atrophic, and a mixed type. When any of these types of irritation was present there was delay in the pneumatization of the temporal bone. Cases of mastoid infection which become chronic often do so because of faulty and delayed pneumatization of the temporal bone, and Wittmaack claims that the sclerosis present in the bone is a primary thing resulting in chronicity, and not a secondary thing as a result of chronicity.

Our ideas about the size of the mastoid in young children must as a result be changed as many of these cases were developed normally long before they were expected to have any mastoid development.

The case reported by Dr. Bass bears out in every detail many of the statements of Wittmaack regarding the development and pneumatization of the temporal bone.

W. N. Offutt, Lexington: In line with what Dr. Bass has said, I have had two cases which I would like to report. One of them, a child three years old, was brought to the office with marked unilateral middle ear infection. I incised the drum membrane which drained for three or four days then healed, the tympanum again becoming normal. I heard no more from the patient for three or four weeks. The child then returned to the office complaining of slight earache, there was some sagging of the superior posterior canal wall, but apparently no evidence of mastoiditis. I made a free incision into the drum membrane. A roentgen-ray examination of the mastoid was made which showed typical evidence of disease. Mastoidectomy was then performed, and as in the case reported by Dr. Bass, the entire cavity was filled with disintegrated cells and the wall was necrotic.

The other case was spontaneous hemorrhage from the maxillary antrum: The patient was a child of five seen during my hospital service. The hemorrhage was coming from underneath the middle turbinate and originated in the antrum. Packing was introduced and I had no difficulty in arresting the bleeding for a time. About ten o'clock that night I saw the patient again and hemorrhage had returned. I packed again with cotton saturated with adrenalin and the bleeding ceased. At one o'clock the following morning there was a recurrence of the bleeding and the antrum was irrigated and adrenalin packing again introduced. That continued for forty-eight hours when the hemorrhage finally stopped.

These cases are so similar to those mentioned by Dr. Bass that I desired to report them.

Gaylord C. Hall, Louisville: In regard to the case of hemorrhage from the maxillary antrum: As stated by Dr. Bass, I saw the patient during his absence from the city. In this case I believe the cause of the hemorrhage was constitutional,

notwithstanding the fact that the clotting time was six minutes. I merely administered 3 cm. of haemo plastin and the patient returned to Dr. Bass the next day.

I think from Dr. Bass' description of the case and the apparent lack of local pathology, that it must have been due to some constitutional disturbance. The point made by Dr. Watkins is important and entitled to consideration. I would like to have Dr. Bass speak of the menstrual history of the patient in closing.

A. L. Bass, Louisville (in closing): I thank the gentlemen for their discussion. I was unable to appreciate why they made the transfusion into the anterior fontanelle. I wish now they had introduced the blood intra-peritoneally. Had this been done there might have been a different story and possibly the child would have lived.

In the second case I inquired particularly about the menstrual history, whether there had been any disturbance, etc. and the patient said there had not been any trouble in that respect. Whether there was any abnormality at this time I am unable to say.

Dr. Griffith referred to a well-developed mastoid in a child four months old. He beats me by two months. I thought my case was rather unusual when the text books state that the mastoid is not usually developed until the end of the second year.

Someone referred to the work of Marriott and Arbuckle: They have been operating upon the mastoid where the child had persistent diarrhea and they could not find any other cause for it. They have operated in many cases where the ear showed no symptoms whatever and claim to have secured some wonderful results. In the case reported the child had diarrhea when the ear disturbance started.

Dr. Heitger spoke of myxedema of the middle ear and its relation to development of the mastoid cells. This child had a well developed mastoid cavity.

Constitution and Infectious Diseases—Naegeli believes in the variability of viruses. He observed grave superinfections in twelve light cases of influenza caused by a gravely ill man brought into the same room (a total of eleven deaths). In the same epidemic the infections were severe in one part of the regiment and light in the other part, stationed elsewhere. He believes that epidemic encephalitis is different from influenza (in the latter, leukopenia and grave degenerative changes in the leukocytes) and that it is a new disease. Leichtenstern's cases of influenzal encephalitis presented a large hemorrhages of the brain. The mild cases of smallpox in the recent Swiss epidemic differ from true smallpox clinically and hematologically, although there is crossed immunity. The disease should be called variola nova.

CEREBELLAR ABSCESS OF OTITIC ORIGIN: CASE REPORT WITH AUTOPSY FINDINGS.*

By S. B. MARKS, M. D., F. A. C. S.,
Lexington.

R. V., white man, aged 41, night watchman, was referred to us by Dr. J. E. Baucom, of Winchester, with the following history: He had never been seriously ill, but 14 years ago had a double otitis media which he attributed to working in a dusty wheat ear. Some months later he came to Dr. Baucom with a chronic suppurative condition in each ear, with destruction of the drum membranes and many granulations filling the middle ears, but with no mastoid involvement and no history of sneb. Following this the granulations recurred several times in the next three or four years, after which he often reported because of moisture in his ears at times accompanied by small granulations.

He again reported to Dr. Baucom ten days before I saw him because his right ear had been discharging freely for four or five days. At this time there was coming from the right ear a thin yellow pus filling the middle ear, and a large polyp nearly occluding the canal and coming from the region of the attic. This was carefully removed with scissors and the base cauterized with silver nitrate leaving the cavity partly filled with smaller granulations, but with no signs of cholesteatoma and only a slight odor. At this time there was no pain nor any sign of mastoid involvement. Soon after this there developed at the right temporal region just above the mid-point of the zygoma an intense, persistently recurring, stabbing pain of which he complained bitterly and described as being deep in his head and which was not relieved by anodynes, and he was unable to sleep because of it.

Two or three days after the appearance of the pain there developed an area of tenderness and slight redness over the upper part of the right jugular vein which disappeared in the following four or five days.

The discharge continued the same or a bit thicker, but with no elevation of temperature until a week after the removal of the polyp reaching its highest the day before we saw him and leaving entirely in the next three days.

Examination revealed the following: a thin fairly well nourished man of about forty years, with an expression of anxiety and pain, showing no constitutional derangement, with normal urine, leucocytes 11,000, blood Wassermann negative, blood pressure within normal

limits and no abnormalities of the pupils, fundus nor ocular muscles. The right ear showed a moderate amount of a thin yellowish mucopus with no cholesteatoma and little odor coming from a middle ear, with the lower two-thirds of the membrane destroyed and partly filled with small firm granulations. There was no mastoid nor other tenderness elicited.

An x-ray examination showed the right mastoid dense, sclerotic and rather small, but with no evident necrosis and no cellular structure. The left was also sclerotic but showed cells at the tip.

The nose was negative upon the right but upon the left there was marked septal obstruction and some thin crusts with nothing to signify from where they arose. Transillumination showed the anterior sinuses clear and there was no significant change in the spheno-ethmoid region upon posterior rhinoscopy. The tonsils were septic to a plus two degree.

Upon admission his temperature was 100.6°, pulse 90, and respirations 24. There was no change in his condition for the next three days except an x-ray examination of the teeth revealed an unerrupted third molar upon either side above, and his temperature and pulse reached normal. Because of the persistence of the pain, with a disregard of the teeth, it was decided to open the right mastoid, Dr. J. A. Stucky who saw him with us, agreeing.

Operation revealed a very thick dense bone which concealed two or three very small cells filled with yellow pus under pressure lying external to but separated from the antrum by a thin apparently intact layer of bone. The middle ear in its entirety and the antrum contained a thick pyogenic lining membrane and a moderate amount of yellow mucopus, with some small granulations in the middle ear but no necrosis nor cholesteatoma and there was no sign of pressure nor blockage. No fissure was found in the tympanic plate and the bone over the sinus was sound. The usual flap radical operation was completed. The tip was not diseased.

The convalescence was uneventful, but for a rather extensive and sluggish wound infection and an anxiety upon the part of the patient that the pain which had disappeared would return, and an indisposition to sit up in bed, but he slept and ate well and his temperature ranged from 97.6 to 100.2° F. with a pulse around 70 and respirations 20, for five days. The range after this was from 97° in the early morning to 98.4° in the afternoon with a pulse of around 70 going upon one occasion as low as 60. This slow pulse was disregarded as the patient said his pulse was always slow, and Dr. Baucom agreed with

*Read before the Eye, Ear, Nose and Throat Section of the Kentucky State Medical Association, Louisville, May 12th, 1927.

him, saying it was rarely over 70 and frequently as low as 60 as a normal state. He was gradually got out of bed in a chair for an hour or so and was comfortable when sitting in bed or out, although for the first few times he was up in bed he complained of being dizzy but with no nausea nor vomiting. In spite of the fact he was apparently improving, eating and sleeping well with some improvement in his wound, he did not gain strength and was getting thinner and upon the night of the eleventh day he was about his room and had to be got back to bed. The next two days were uneventful, but the next night he was up again and upon the following day he was torpid with no disposition to talk and had to be fed, his pulse reaching at one time as low as 56.

Another consultation was held, the eye ground upon the right showing a distinct distention of the veins with a slight change upon the left and some increase in the reflexes but no nystagmus, pupils moderately open and sluggish and no ocular-paralysis. The leucocytes were 9,000 and general examination was negative. A diagnosis of probable temporo-sphenoidal abscess was made and an exploration advised.

The original wound was extended upwards and the tympanic plate examined for a fissure, and as none was found the temporal lobe was exposed at its lower border just above the floor of the middle fossa and a Jackson explorer slowly introduced for a half an inch, through a small incision in the dura, when quite a considerable amount of thin fluid escaped and we thought we were into a cyst of probably infectious nature. After placing a small rubber drain, the lower part of the old wound, which had been packed off, was explored and a small opening was found in the bone over the sinus; this was investigated superficially and as no pus was found was disregarded.

After the patient had left the operating room the after-thought uppermost in my mind was that a distended posterior horn of the lateral ventricle had been opened and we were worse off than before. This was well verified the next morning when a profuse drainage was found to have occurred during the night with the patient in collapse. The drain was removed and marked improvement was noted during the day, but collapse again occurred and death took place the next morning from respiratory paralysis.

The autopsy report follows, for which I am indebted to Dr. E. S. Maxwell, of the Lexington Clinic:

"The body is that of a white man, about 40 years of age, which shows considerable emaciation. The brain only was examined.

"Over the right mastoid there is a surgical wound from which gauze drains protrude. The skull cap was removed and the meninges covering the cortex were found to be apparently normal. Considerable extra dural pus was found on the posterior surface of the petrous portion of the right temporal bone and immediately adjacent to the right lateral sinus. A surgical wound was found passing to the posterior horn of the right lateral ventricle. Cut section showed two abscesses in the right lobe of the cerebellum. The one in the anterior and lateral portions measured 25 mm. in diameter and is filled with thick, creamy pus. A smaller abscess measuring 10 mm. in diameter was present in the lower and posterior portion of this lobe. The lining of the right lateral ventricle is roughened and shows numerous petechial hemorrhages. Both ventricles show evidences of considerable distention. No abscesses were found in the cerebrum. The right lateral sinus was completely thrombosed and the thrombosis extended into the foramen of exit in the temporal bone.

"Histopathology: Sections from the walls of the cerebellar abscesses showed marked polynuclear infiltration with necrosis. Sections from the wall of the right lateral sinus showed a marked acute inflammatory reaction. Sections from the thrombosed sinus shows it to be of recent origin.

"Diagnosis: Multiple cerebellar abscesses.

"Thrombosis of the right lateral sinus.

"Extra-dural abscess adjacent to lateral sinus.

"Acute inflammation of the lining of the right lateral ventricle."

Comment: 1. The absence of the usual symptoms of cerebellar abscess, except the increasing emaciation, even though the autopsy findings showed them to be of long standing.

2. The absence of any symptom at any time of a sinus thrombosis, except the area of tenderness and redness over the jugular vein of a three or four days duration and that resolving entirely.

3. The failure upon my part not to have recognized the cerebellar condition in the presence of the increasing emaciation and the absence of insomnia so often seen in temporal lobe abscess and not to have first explored the region of the sinus thoroughly before opening the middle fossa.

DISCUSSIONS

R. Glen Spurling, Louisville: I appreciate your courtesy in asking me to discuss Dr. Mark's most interesting case. If I had seen this I probably would have been misled just as were the gentlemen who examined the patient. The only comment I have to make upon the diagnosis, is the fact that greater importance should have been attached to the slow pulse. This sign in

conjunction with the other signs and symptoms point clearly to medullary pressure. In cerebellar lesions, medullary pressure may result from two causes. Firstly, it may be due to an interference with the circulation of the cerebro-spinal fluid by obstructing the aqueduct of Sylvius or the fourth ventricle. Secondly, it may be due to a direct pressure on the brain stem by a cerebellar or pontile lesion, which does not block the circulation of the cerebro-spinal fluid. In either event, among the signs and symptoms, will be found a slow bounding pulse. In this case I believe medullary pressure was probably due to the latter cause, inasmuch as the patient apparently did not have hydrocephalus.

This subject of brain abscess is most interesting to me because I have had some unusual experiences with similar lesions during the past year. I should like to point out what I consider to be some common misconceptions regarding these lesions. It is generally believed that in brain abscess we always have some evidence of inflammation in the examination of the cerebro-spinal fluid. As a matter of fact, these signs of inflammation as exemplified by increase in cell count, increase in globulin and protein content, and change in the colloidal gold curve are often entirely wanting. There usually is an increase in cerebro-spinal fluid pressure; however, it is usually believed that these cases run a fever and show an increase of leucocytes in the blood stream. These also I believe to be fallacies, because patients with brain abscess frequently show no elevation of temperature whatever, nor do they show a leukocytosis. Regarding the diagnosis of cerebellar abscess in particular, there are a few signs in this case which deserve emphasis. As you remember, nystagmus was absent. When present, nystagmus is a valuable sign of a lesion in the posterior fossa, but when absent it may be of little significance. As I understand it, the pathological anatomy that produces cerebellar nystagmus is due to some impairment or breaking in continuity of the cerebello-vestibular apparatus. Thus any lesion that affects Deiters' nucleus or any of its connections with the semi-circular canals may result in characteristic jerking movements of the eyeballs. Thus we can easily see that there may be often a large cerebellar lesion without involvement of these tracts. Again the cerebellar lesion may be in the mid line, and this is well known not to cause nystagmus. Other more important signs of cerebellar disease, whether it be abscess or tumor, are dysmetria, incoordination of movements, hypotonia, and instability of posture. Taking it all in all I believe that cerebellar lesions are the easiest neurological diagnosis that we have to make, although just as in this case there may be great confusion.

In urological surgery just the same as in abdominal surgery, our ultimate result depends

often in a large degree upon the promptness with which the diagnosis is made. This is particularly true of brain abscess. The matter of a few hours may swing the pendulum from an operative success to an operative failure.

As to the treatment of cerebellar abscess in general: Once the diagnosis is made, I think we should approach the lesion in the same way that we would approach a cerebellar tumor, in other words a wide exposure through a typical cross bow incision. Dr. Gaylord Hall and I have recently seen an abscess of the left cerebellar hemisphere, which we drained according to this technique. The man was operated upon three months ago, and is at present well as far as we can determine. Of course this case was operated upon under local anesthesia just as we operate upon practically all head cases. I should like to say a word in closing regarding the treatment of staphylococcus meningitis, which is such a frequent complication of ear disease. During the past three months, I have operated upon three cases of meningitis proven to be due to the staphylococcus, and two of the patients are well today. The operation consists of laminectomy with a free drainage of the subarachnoid space.

Gaylord C. Hall, Louisville: I enjoyed Dr. Marks' report very much. As time did not permit Dr. Spurling to make a full report of the case we saw together, I want to detail a few points in connection with it, because I think the treatment employed was a distinct step forward in the handling of these cases.

The patient had chronic suppuration of the ear with symptoms of acute labyrinthitis at first. The nystagmus he had was away from the affected side, later it returned to the affected side. He had symptoms of slightly increased intra-cranial pressure. Vertical nystagmus both upward and downward and the muscular incoordinations were all on the side of the affected ear.

The question of treatment arose: The man had persistent vomiting, he was dehydrated, starved, he was able to retain no nourishment over a period of two days. The question arose, should we operate through the mastoid, which was manifestly diseased and where the infection originated, or should we disregard this focus of infection for the time being and deal with the brain lesion? Inasmuch as the cerebellar symptoms were of the greatest importance we adopted the latter procedure. And I want to say to you that while these cases are exceedingly rare, I am firmly convinced from the outcome in this case, if I had another cerebellar lesion to deal with I would certainly have Dr. Spurling do as he did in this instance, that is make a wide exposure to relieve the pressure, then drain the abscess to prevent further extension into the brain. After the patient recovered from this operation,

and we had prevented further infection of the brain by means of proper drainage, then performed radical mastoidectomy. To further show the wisdom of the procedure adopted in this case, in the radical mastoidectomy which we did three weeks after the cerebellar operation, we found that this man had an exceedingly forward sinus and the antrum was pushed backward underneath the sinus, so if we had attacked the ear, primarily expecting to drain the cerebellar abscess through the posterior incision, it would have been impossible to do so on account of the forward position of the sinus. As it was we drained through the cerebellar incision where drainage was favored by gravity.

I am glad to say the man has made a complete recovery.

J. A. Stucky, Lexington: I saw this patient on two occasions and felt sure that the sphenotemporal lobe was involved as a result of the mastoid infection and thought it was probably an extra-dural abscess. All the symptoms that could be elicited were carefully studied, and in thinking the matter over now, I do not see anything in addition that I would advise in another similar case. This case was an atypical mastoid with complications that gave no indication of their location.

I wonder if these small abscesses which were found ten or twelve days after the first operation were there at the time I first saw the patient, or if they were the result of metastases? The case was a puzzle from the beginning. I have seen small cerebellar abscesses in several cases at autopsy that gave no previous clinical evidence, and I have seen cases with large abscesses that gave all the clinical symptoms and were easily diagnosed. I had one patient die on the operating table from rupture of a large cerebellar abscess.

Is there any way of diagnosing these small cerebellar abscesses? Did we leave anything undone in this case to make a correct diagnosis?

W. P. Drake, Bowling Green: Unfortunately the symptoms of brain abscess do not appear generally until too late to do much good for the patient. Such symptoms as emaciation, pulse and eye ground changes, do not appear until late in the condition. Two symptoms are rather prominent in cerebellar abscess, namely, headache and periodic vomiting. These two symptoms will assist us in differentiating between cerebellar and temporo-sphenoidal abscess.

The headache in cerebellar abscess is more persistent and more frequently confined to the side of the head or area of the lesion. Vomiting in temporo-sphenoidal abscess is usually at the onset. In cerebellar abscess vomiting appears at intervals throughout the entire course. There are other important symptoms that may be present, such as nystagmus, subjective vertigo, diadokokinesis, and disturbances of statis equili-

brium. I think one should make sure whether he is dealing with acute suppurative labyrinthitis or cerebellar abscess, as the treatment of the two conditions is quite different. Both conditions have nystagmus, but the nystagmus in cerebellar abscess is a changing, rotary nystagmus, i. e., the changes are made in the direction which the eyes are turned, but most usually the pronounced movements of the eyes are toward the side of the lesion. The nystagmus may remain indefinitely and become more marked as the lesion progresses. In suppurative labyrinthitis we have a rotary nystagmus which is always increased when the eyes are turned toward the sound ear with subsidence or disappearance of the nystagmus in from ten days to three weeks.

I do not know whether Dr. Marks made an exploration of the cerebellar region in front of the sigmoid sinus, and the cerebellar region behind the sigmoid sinus, at the time of the operation. If he did not, probably that is one of the things he should have done in making his exploration.

W. N. Offutt, Lexington: As stated by Dr. Marks in his paper, I saw the patient on several occasions with him. One feature of interest in connection with the case was the entire absence of ocular symptoms. The man had a cerebellar abscess which proved fatal, therefore he ought to have had some ocular symptom, fulness of the blood vessels, changes in the disc, or other indicative signs—but he had none.

I can think of nothing that was left undone either from a diagnostic or operative standpoint.

Edmond D. Wells, Louisville: I was very much interested in Dr. Marks' report, and especially his reference to the treatment of cerebellar abscess. A very valuable contribution to this subject appeared in a recent number of the Archives of Oto-Laryngology in which the results are given in five thousand cases. In thirty-nine hundred mastoidectomies there occurred only seven brain abscesses. Of the seven, three patients died, which is only one in five hundred and sixty-eight. No one man has the opportunity of seeing many brain abscesses.

I believe we ought to call a competent neurological surgeon to help us in these cases, because we do not see a sufficient number of them to become expert in the diagnosis. Whenever a patient presents symptoms indicating brain irritation, we ought to call a neurological surgeon in consultation.

Joseph D. Heitger, Louisville: No one has mentioned the use of the Barany test in diagnosis, and I am wondering whether this was attempted in the case reported by Dr. Marks. Investigations concerning the methods of Barany have progressed in a general way until I believe we can now say there are few things that will help more materially in assisting in making a proper neurologic examination. If with a sus-

pected brain lesion the patient is able to withstand the entire examination the chances are there may be involvement of the posterior fossa. For instance, a patient with a cerebellar lesion can stand so much more of the routine Barany examination than one with a lesion in the anterior or middle fossa. A number of so-called axioms were developed during the elaboration of the Barany technic for which too great claims were made. The Barany tests will show whether they were dealing with a dead labyrinth or vice versa; will assist materially in any diagnosis of angle tumors, and also in the differential diagnosis of cerebral and cerebellar lesions. Most of us see too few of these cases to warrant our drawing any marked definite conclusions. It is all very well to find a patient had a cerebellar abscess, and if he recovers to say that the proper method of treatment was followed. Often there is not evidence enough upon which to base such an opinion. Of course, the "proof of the pudding is in the eating". The patient gets well, but that doesn't warrant the operator in making the statement that because a certain type of brain lesion recovered the recovery was due to a certain route of approach. The Barany test in the last few years has I think added something to the diagnosis of brain lesions. Many have tried these tests, expecting them to show pathognomonic signs, and have been disappointed. Work done in the last few years has been much more conservative for the simple reason that we have learned what to disregard and what to depend on. There are only a few cases in which the Barany tests have failed to differentiate between lesions of the anterior and posterior fossæ. If other neurological symptoms are substantiated by the Barany tests that is about all we can expect.

Walter Dean, Louisville: If I understand Dr. Marks correctly, his patient had two or more cerebellar abscesses. Such a patient is foredoomed. If the cerebellum had been entered and one abscess found and drained, naturally the operator would have been satisfied and explored no further or insufficiently. From the description of the postmortem findings, I do not conceive that preoperative diagnosis of multiple abscesses of the cerebellum could have been made.

S. B. Marks, Lexington (in closing): I thank the gentlemen for their liberal discussion. I was very much interested in a report by Ferreri published in a recent number of the Archives of Oto-Laryngology. He reviewed a large number of cerebellar abscess cases of the so-called silent group. The case I reported belongs to the silent group. That was the reason for opening the cranium in the situation described instead of in the posterior region. Even in the silent cases he (Ferreri) states there is always persistent headache confined to the affected side. This man had headache which was relieved by radical

mastoidectomy, probably due to the few small cells containing pus confined in the sclerosed bone. Aspirin relieved the pain after the mastoid operation. At no time did the patient vomit, nor did he have any nausea.

One thing I neglected to mention in my report was that the blood culture was negative, yet the man had thrombosis of the lateral sinus with pus around it. At no time did he have severe pain or any symptom of thrombosis of the lateral sinus, except slight tenderness and redness below the ear for a few days.

I was misled by the fact that the patient stated his pulse had always been low, and this was confirmed by the family physician. Furthermore, the leucocyte count was always low, which is usual.

I believe both abscesses were old ones, because they were well inclosed by a pyogenic membrane which lined the abscess cavities. One of the abscesses was quite small.

CEREBRAL ARTERIOSCLEROSIS.*

By C. W. DOWDEN, M. D., Louisville.

FOREWORD ON ARTERIAL HYPERTENSION.

One of the most hopeless tasks confronting the medical profession today is the control, much less the cure, of arterial hypertension or hyperplexia, as the English prefer to call it.

The classification of functional and organic hypertension which we have followed for a number of years, was unquestionably definite progress towards a solution of the difficulties. Such a classification, however, left much to be desired, chiefly because a satisfactory explanation could not be offered for the functional type, which was frequently, if indeed not always, the forerunner of the organic type.

While we must still acknowledge defeat as to the knowledge of underlying causes, the situation is becoming clearer each day, not from the laboratory test tube but from common sense reasoning and knowledge gained through a study of the very beginning of this perplexing problem. Indeed such a course is necessary to successfully combat any symptom or any disease.

The first question we should ask ourselves is whether the structural change that can be demonstrated in the so-called organic hypertension or arterio-sclerosis, is responsible for the functional disturbance or whether the functional disturbance is responsible for the structural change. This may, upon careful analysis, be the crux of the whole situation.

If we would avoid the association of arterio-sclerosis and study hypertension at its very

*Read before the Eye, Ear, Nose and Throat Section of the Kentucky State Medical Association, Louisville, May 12th 1927.

beginning, we must begin through an investigation of young and apparently healthy people. How many of us record blood pressures in young individuals and when we do, how do we interpret slight rises above normal?

Much interesting work has been done along this line that is very enlightening. Of 580 undergraduates at Toronto, the average pressure was 126.5-71. Ten per cent of this number had systolic pressure of 140 and of these the average age was nineteen. Alvarez, (2) in a study of 1500 students, found that over twenty per cent had systolic pressures of 140. Of 650 children aged ten to seventeen, 52 had systolic pressures above 130. Some of these were further studied and a few showed thickened arteries, slight displacement of the apex beat, accentuation of the aortic second sound, left side preponderance and radiographic enlargement of the heart; quite sufficient to indicate that certainly transient, intermittent and even permanent hypertension exists among the young.

We are all more or less familiar with the bizarre symptoms exhibited by many people and even children, which are attributed to an over-responsive vaso-motor system. Such being true, why should we not find transient hypertension under physical and especially psychical stress? Certainly the very intimate connection between the higher centers and the vaso-motor centers, causes the latter, as expressed by some of our English scientists, to respond to every blast of vain doctrine.

The average boy of fifteen to twenty will have a blood pressure of 110 to 120, with a diastolic pressure of 60 to 80. Under any of the various effort tests the systolic will go to 165 to 170, with the diastolic remaining the same. In three to five minutes, the pressure will drop to the first figure or even lower. Occasionally, however, one will be found with a pressure of 135 and a diastolic of 70 and after the same exercise, the pressure will rise to 170 and the diastolic to 85 and it requires twenty minutes for it to return to the starting point. Here then, it is believed, is the first evidence of permanent hypertension and the one which we should discover if we hope to curb this increasing menace. In all probability, this latter case is one of potential hypertension—it is now transient—but the future course will probably be determined by the strain under which his vaso-motor system is placed. If he is to be spared the structural changes which arise from continuous functional disturbance, then he must be placid rather than over-anxious, striving and a slave to anticipation. His employment must be methodical and agreeable, rather than strenuous and uncertain. His physical habits should be relaxed, rather than trim and res-

training. A familial tendency may add to his dangers and this should always be inquired into. He may withstand the strain until the responsibilities of maturity or even middle life increase the load to the breaking point. Numerous such cases have been reported as functional hypertensions, their significance not realized, consequently, the warning not heeded.

I myself plead guilty to such errors and even in the past four or five years, I have seen some of my innocent transients of the so-called functional type, become fixed and permanent with a hovering vascular tragedy looming in the foreground.

It is not unusual to see cases under mental stress and anxiety with rest pressures of 150 which will rise to 220 under effort tests and at another time, when stress is absent, show pressures of 118 and up to 140 under the same test. Certainly this is excessive vaso-constrictor responsiveness. At a later stage, if the stress and anxiety continues, the rest pressure will assume a higher level and the figures under effort tests will rise still higher. With the structural changes which are now appearing, will come cardiac hypertrophy and an increase in diastolic pressure, which is a better measure of the strain on the arteries.

What are we to say about the effects of tobacco, alcohol, salt, so-called intestinal toxins, high protein diets, obesity and the climatic as causing or influencing high blood pressure? I am not yet willing to concede that there is not a type of increased tension in the obese that will respond to weight reduction, nor a type associated with the menopause and dependent upon an endocrine imbalance that cannot be controlled. It is true, however, that we find as many hypertensive cases in the thin as in the obese and as many or more of the obese with low pressure than with high pressures. It is equally true that we find many women going through the menopause with low pressure as with high pressures. Honor are practically even and it may be that even here, an unstable vaso-motor system may be the deciding factor. Certainly the general preparation of food and moderation in eating is of more importance than protein and salt intake. As a matter of fact, most of the so-called intestinal toxins arising from the upper bowel, are depressors rather than pressors.

Nador Nakitit (3), in a study of 495 cases, found a definite relationship between such factors as meat, alcohol, tobacco and hypertension. Furthermore, this seems to be rather consensus of opinion among present authorities on the subject. It seems fairly well established, therefore, that the origins are several.

Exaggerated function is probably the cause and this is not the same in every case. If recognized in early life, much can be done in regulating habits and environment to prevent structural change in the arteries. Whatever the cause, it goes through a transient and intermittent stage and finally becomes fixed and subsequently anatomical changes, which lead by steady progression to the developed disease, are probably one and the same thing.

While general arterial hypertension is of interest chiefly to the medical man, when this process involves the cerebral arteries, it at once becomes of interest to every branch of the medical profession. While I feel that the foregoing remarks are extremely important with reference to prevention of the fixed disease, there are also many heretofore unsuspected symptoms suggesting early involvement of the cerebral vessels.

It seems important to keep in mind that arterio-sclerosis is not an entity, but a manifestation of many diseased processes, some of which remain obscure. While cerebral sclerosis is usually part of the general sclerosis, it not infrequently is the chief field of operation. The peripheral vessels are not necessarily an index to the cerebral vessels and advanced sclerosis is often present with perfectly normal peripheral vessels. The converse is also true.

The symptoms and signs are dependent upon: (1) Distribution and intensity of the sclerosis, and (2) the recurrence of results dependent upon the sclerosis—principally hemorrhage, thrombosis and rarely embolism. Involvement of the basilar artery will of course produce chiefly symptoms referable to the bulb of the cerebellar vessels, cerebellar symptoms and of the middle cerebral or its branches, paralytic symptoms. Either we see most of these patients when the disease is well advanced or we fail to recognize the symptoms of early involvement.

An English writer has quite cleverly divided cerebral sclerosis into a pre-hospital and hospital class. Of the former, he found that the signs and symptoms started on an average of five years before admission and in some instances ten years or more. These were partly mental and partly physical. Some showed a period of elevation and a sense of well-being—a condition described by Sir Clifford Allbutt (5) as being due to a richer supply of blood to the brain. With this period came such actions as dressing extravagantly, consorting with prostitutes for months, then settling down, with later intermittent headaches until greater focal symptoms appeared. Other signs were extravagant spending of money and speculation, followed by headaches, with anxiety and depression, increased irritability,

emotional incontinence at home, depressions and delusions of ruin and hypochondriasis. Mental and well as physical fatigability were frequent and somnolence in day and insomnia at night were common symptoms. There was loss of interest in domestic and business affairs, affection replaced by irritable obstinacy and even brutality. Intolerance of usual quantities of alcohol, tea and coffee, with palpitation resulting, were common complaints. Vertigo on the golf course, irritability in performing routine work and a tendency to sleep at the desk, transient difficulty in speech after physical or mental strain, morning headaches, were all included in the category of symptoms.

Unfortunately and of the greatest importance was the fact that no retinal examinations had been made. There are good anatomical reasons why the retinal vessels should act as a guide to the condition of the cerebral vessels. In fifty per cent of cases of retinitis with arteriosclerosis, studied by Foster-Moore (6), death followed from a cerebral lesion.

It is believed that with inquiry into the patient's habits of life for a period of several years back, along with an intelligent study of the retinal vessels, much valuable information will be obtained that will enable us to outline a therapeutic procedure which will be of great value. In the early stages, the arteries are paler and straighter than normal and no longer clear columns of blood. There is knuckling of the veins where they are crossed by arteries and diminished blood stream through the veins. At a little later stage, the arterial twigs are cork-screwed, the lumen diminished, with silver wire appearance here and there and the veins, where crossed by arteries, are converted from their paths and show blanching on either side. On the near side of the vein, ampouliiform swellings are seen as if the blood were dammed back. In the third and last stage and the one usually seen, there is marked silver wire appearance or a fibrous streak. Hemorrhages are seen on the surface of the retina and the disc is at times edematous, often atrophied, and accompanied by failure of vision.

Weiner and Wolfe (7) have noted that in high blood pressures, the pupils contract to light, then dilate, even though the light is continued. In early cases frequently the pupils are sluggish to light or there is a bilateral myosis.

Arcus senilis occurs in fifteen to twenty per cent of cases, but this is also found in normal individuals. Occasionally, irregularity of the deep reflexes on the two sides will be found without hemiplegia or other gross lesions. The blood pressure may be normal or

low and the presence of albuminuria depends upon the kidney involvement.

It has been demonstrated experimentally that sclerosis of the renal vessels does not produce general hypertension.

Included under the hospital stage were those cases in which the symptoms and signs were such as to remove them from the home surroundings. This is the type in which the diagnosis is usually first made and represents terminal symptoms rather than the early signs. They can be quite conveniently arranged into two groups—those in which the pressure is high with renal damage and cardiac hypertrophy, showing a rapid course with severe focal lesions. Such cases are not likely to be mistaken for something else. The other class is represented on the whole by lower pressures with the absence of severe focal lesions and without the rapid progress to severe dementia and death. Allbut applies the term “decreascent” to the latter class, since he believes it is associated with senility or pre-senility and may remain stationary for years. I am sure we have all seen the elderly individual who has gone along quite comfortably for years with a high systolic and even diastolic pressure. The other type he classifies as true arteriosclerosis and practically always these run a rapid course and usually suffer a series of focal lesions, generally hemorrhagic.

Associated with this is a train of mental symptoms which are quite characteristic and unquestionably depend upon interference with the cerebral circulation. There are frequent outbursts of tears or laughter and after apoplectic or epileptiform seizures, are compulsive and uncontrollable. Sadness, melancholia, delusions and at times even suicidal attempts are seen. Apprehension, even to the slightest examination and motoraphasia are not infrequently found. At times there is severe vomiting, which by the way, can be relieved by repeated lumbar puncture. Vertigo, occasional deafness, uncertain gait, walking with short spastic strides, coarse tremors of the hands are all to be found in the severe progressive form. Expression is immobile and may be confused with encephalitic sequelae. Hemorrhages, minute or extensive, are quite common, producing paralysis, aphasia, sensory losses, etc., although hemiplegia most often. Any of these latter symptoms will be found in the decreascent group, but conspicuously absent are the high systolic and diastolic pressures, renal damage and cardiac enlargement. Furthermore, the mental symptoms are often arrested and they reach a ripe old age. These are the types in which transient aphasia occur and even mild temporary paresis, from which rapid recovery is

made.

I have reviewed the symptoms in one hundred cases of arterial hypertension coming under my observation. The age ranged from 33 to 75 and I have found nothing to suggest a possible etiologic factor. Practically all of the occupations were represented and associated conditions concerned the heart, the kidneys, the gall-bladder, the nervous system, obesity, the menopause, infections, and in fact, such a varied list that no significance could be attached to it. In the future, however, it is my purpose to obtain accurate records of the retinal vessels, as well as a history of the patient's mental make-up.

It has been more or less generally thought that neurasthenia and psychasthenia were closely related to arterial hypertension. This, however, is hardly probable since in such conditions the nervous system acts as a safety valve and shields the individual from the stress which must be a recognized factor. Again, chronic gastro-intestinal disease is often considered a cause but in these individuals, the gastro-intestinal system usually reacts by pain or discomfort to slight strain or stress, which breaks the vicious circle.

The pathological findings in cerebral arterio-sclerosis offer some questionable explanation for the great variety of symptoms. Branches of the main cerebral vessels, of which the basal supplies the great ganglia and the medullary substance of the brain exhibit little or no anastomosis, whereas the cortical branches covering the cortex like a thick vascular mantle, anastomose freely and ramify extensively in the pia, before entering the cortical substance.

It is possible that the differences in types of blood pressure can be attributed to the lack of anastomosis in one in contradistinction to the free anastomosis of the other. Certainly the changes present many problems, mechanical and histological. As to the etiological factors we cannot hope to determine accurately all the underlying cause of brain arterio-sclerosis. The influence of wear and tear seems fairly well established. There is no good proof that any specific infection is responsible. That hypertension is always of renal origin is a theory impossible to maintain. Dietary treatment has given disappointing results. Obesity must be of questionable influence, except so far as it is due to an error in metabolism. As many thin hypertensives are found as those who are obese. Care should be exercised in rapid weight reduction, since this may be the signal for rapid deterioration. Gradual reduction from a modified dietary standpoint will frequently produce satisfactory results. Alcohol and nicotine are not now generally accepted

causal factors. Teetotallers seem to be as susceptible as others.

Great importance must be attached to the sympathetic nervous system and particularly in the young. While it is possible that the effects of an old infection would be an important agent in the genesis of arterio-sclerosis, the result of an acute infection on the vessel is strictly an arteritis and not arterio-sclerosis. For this reason, syphilis has not been mentioned in this discussion. Emotional factors, such as worry and anxiety must occupy a prominent place in the etiology of hypertension. Especially in soldiers was it found that high systolic and diastolic readings were largely proportionate to the degree of anxiety present.

Finally, we must realize that rather than seek for a specific causal agent in the laboratory or elsewhere, we can more profitably study the soil, which is the individual's responsiveness to various irritants, particularly mental. With occurrence of emotional states, depression and confusion after the early fifties, should always be looked upon as possibly due to sclerosis of the cerebral vessels. A careful history and above all, a routine ophthalmoscopic examination of such patients can quite possibly permit of a diagnosis at an early stage of the disorder. With an early diagnosis, much can be expected from the proper treatment, especially that which would control the patient's mental activity.

I have quoted freely in many instances verbatim, from two articles appearing in "Proceedings of the Royal Society of Medicine," Vol. XXIX, No. 8, June 1926, viz.:

1. Discussion on Hyperpiesis, by The Rt. Hon. Lord Dawson of Penn., Prof. Francis R. Fraser, Dr. F. Parkes Weber, Dr. J. A. Ryle, Dr. D. C. Hare, Sir John Broadbent, Dr. Henry Ellis, Dr. J. Crichton Bramwell (Manchester), Dr. C. W. Goodhart, Dr. Halls Dally, Dr. Kingston Barton

2. Cerebral Arteriosclerosis, by G. W. B. James, M. C. London, D. P. M., London. Discussions by: Dr. C. C. Worster Drought, Dr. R. Travers Smith, Dr. Neill Hobhouse, Dr. V. S. Hodson, Dr. H. G. L. Haynes, Dr. Graham Forbes, Dr. A. A. W. Petric, Dr. R. H. Cole.

One interested in this subject should not fail to read these two articles, which to me, are the most interesting and instructive of any which have recently appeared.

DISCUSSIONS.

J. A. Stucky, Lexington: I congratulate this section for having brought before us in such a practical manner, this important topic. Exaggeration in the minds of the laity about the dangers of high or low blood pressure and the consequent psychic effect is doing a great deal of harm, and I was glad to hear the essayist empha-

size this fact. Suker before the American Academy of Ophthalmology a few years ago spoke of the necessity of examination of the ocular fundi in every case of hypertension. Wherever one sees the silver line, or evidence of contraction of the blood vessel, sclerosis is present. Regardless of whether the blood pressure is registered by the instrument as high or low, that patient had better be under the care of an internist or the family physician to investigate and ascertain the cause of it. It may be the intake of food or drink that causes it, whether it be high or low blood pressure, because we find such disturbances almost as frequently in one as the other. The American people are rapidly becoming less resistant because of the strenuous life of the present day, indiscretions in diet, over-eating, etc. I think we must return to a rational method of living. Undoubtedly coffee, tea, coca-cola and tobacco are contributing factors, then comes overwork, and finally alcohol is the worst of all, it creating an abnormal appetite causing one to put into the stomach about four times as much food as he otherwise would do. I have demonstrated this in several patients with hypotension and neurotic conditions by giving them small quantities of alcohol and observing them afterward. At first the pressure did not rise materially, but after partaking of a heavy meal the blood pressure showed very decided hypertension in a few hours. Alcohol stands at the head of the list of causes of this condition on account of the artificial appetite it creates. In the peripheral circulation of the cerebrum is where the oculist can help the internist by recognizing the early evidences of sclerosis and not alarming the patient. Yesterday I had a striking example of this kind: A woman aged forty-nine years came into my office actually white with fear, because someone had told her that her blood pressure was entirely too high and she was going to die of endocarditis unless something was done immediately. She complained of pain in her chest and eyes and diminished vision. Her pulse was rapid, hands cold and clammy, the menopause delayed, she is nervous and has many other symptoms. I believe the internist will find the cause of most of her trouble and be able to correct it. She has sclerosis or narrowing of the blood vessels in the fundus of one eye but not in the other. One or two spots were noted in the retina. This condition I shall watch with interest. It is a question of metabolism plus the psychic effect, and we can do our patients a great deal of good by dispelling some of their fears.

High blood pressure is a symptom of disturbed metabolism, not a disease, and I think emphasis should be placed upon the fact that the nervous system plays a large part in it.

Samuel G. Dabney, Louisville: I have enjoyed Dr. Dowden's excellent paper, and have not much

to add to it. I am impressed with the fact that he says the symptom generally observed by the oculist is retinal hemorrhage. I look upon that as a reflection. It is a reflection first on the part of the general physician, and second on the part of the oculist. Retinal hemorrhage is the last thing we should see, not the first. Other symptoms are observed long before there is any hemorrhage. There will be a copper streak along the artery, tortuosity of the vessels, some haziness along the optic disc, and decided indentation where the arteries and veins cross. These symptoms should put us on our guard immediately, and they occur almost invariably before there is any hemorrhage. It is of great importance that a mydriatic be used to make a thorough ophthalmoscopic examination. I think the importance of ophthalmoscopic examination is further emphasized by the statement that in retinal arteriosclerosis there is always an accompanying arteriosclerotic change in the brain. And I think this is one of the reasons why persons should be warned of the danger of having glasses tested by the optometrist.

There is another side to the question: The physician is consulted by people past fifty, sometimes past sixty, with headache and dizziness developing within the last year or two, and the symptoms are supposed to be due to eyestrain. They are rarely due to eyestrain in my opinion. People of that age do not often have symptoms of this character due to eyestrain. They are far more often due to some cerebral disturbance such as Dr. Dowden has described, and they may follow disease which should be discovered by the internist before glasses are prescribed. Sometimes, of course, they need glasses for other reasons.

The prognosis of retinal hemorrhage as a feature of cerebral involvement is in the main serious. The statistics Dr. Dowden cited show that a large proportion of the patients develop subsequent hemorrhage of the brain. Thrombosis of the central retinal veins is often said not to be so significant as arteriosclerotic changes in the retina, and yet I have always had impressed on my mind the case of a gentleman who had thrombosis of the retinal veins and died of cerebral hemorrhage seven or eight years later. Of course one case does not mean anything. During the intervening years he had led a vigorous and active life. I sometimes wonder whether had this man been more thoroughly warned about his activities after the first evidence of thrombosis of the retinal veins appeared, his life might not have been prolonged.

Dr. Dowden described the appearance of the retina accurately, and from a practical point of view I would like to add that the most of us are probably guilty in not making a more thorough routine retinal examination in elderly people.

Wm. C. Finnoff, Denver: There is not much

to be added to what Dr. Dowden has said. I have known patients who suffered from arterial hypertension that has apparently been due to mental stress and constant work. Under a careful regime they have been able to control the symptoms. By limiting the amount of work and delegating certain things to others, they have been able to reduce their systolic pressure and the correspondingly high diastolic pressure.

The points made in the paper and also in the discussion are all very important, and the sooner they are brought before the general profession and before ophthalmologists the better it will be.

Joseph D. Heitger, Louisville: I wish especially to emphasize what Dr. Dabney has said. In other countries where there exists a closer relationship between internists, neurologists and ophthalmologists before anything else is done the neurologist and internist will refer the patient to the ophthalmologist. He in turn renders a diagnosis, which is found of great help to such confreres. Frank symptoms of cerebral sclerosis may be present without there being any changes visible in the retina. On the contrary, if retinal sclerosis is present there will always be found sclerosis of the brain vessels with the accompanying symptoms.

An important point in our refraction work is that instead of dismissing our presbyopic patients when we get fairly good results insofar as tension of the patient is concerned we should make more careful ophthalmoscopic examinations, and then refer the patient to a competent internist for the correction, or attempted correction, of the evils which have been responsible for bringing about the retinal changes.

C. W. Dowden, Louisville (in closing): I have only a few words to say in closing the discussion. I do not like for Dr. Dabney to take discredit for the errors mentioned in my paper, because I think they belong wholly and entirely to the medical man. I know that I am guilty and have definitely concluded that hereafter when a patient past middle life comes to me, particularly if he has the mental make-up that I have described, and notwithstanding that the blood pressure may be perfectly normal, I intend to have the eye grounds carefully examined.

This naturally raises another point. I have never believed in attempting something of which I have only a smattering of knowledge. I want someone to do it who knows how. It seems to me, particularly in this line of work where it is important to differentiate the early signs, that the medical man with a limited knowledge of ophthalmology is very likely to overlook the very things we should know. Of course, we are all able to recognize gross changes, but as mentioned in the paper, these are terminal, and not the early signs we must have knowledge of, if we are to protect the patient from the vascular tragedies and a condition which is even worse than death.

WHAT GLASSES SHALL WE PRESCRIBE AFTER THE EXAMINATION.*

By R. H. COWLEY, M. D., Berea.

This brief paper is in no way an attempt to add anything to our present knowledge. It is presented rather with the idea of calling attention to a few of the pitfalls into which a busy oculist may easily fall. They are the points where the man of small experience who is painstaking and conscientious may excel in his results the eminent specialist whose mind is on the weightier matters of the law and who hurries over his refractions or relegates them to an assistant.

A short time ago I was talking to the head of the optical firm which has for years filled my prescriptions, and he told me that not infrequently a patient would come to his shop to have a prescription filled which had been given him by one of the best men in the city. Later the patient would return complaining that he could not wear the glasses. He was sent back to the oculist only to be told that he must wear the glasses. The result in many cases was that the patient went to an optometrist who would simply reduce the strength of the plus lens giving comfort to the patient and a figurative "black eye" to the oculist. Under such circumstances the optometrist is given credit for being clever, while the oculist who has done all the careful painstaking work is discredited. I feel sure that it will not be wasted time if we consider briefly what glasses we should prescribe after we have made the examination.

Fitting glasses is perhaps the most important single thing that an oculist does, and really it requires a degree of skill and judgment quite as great as is required for the eye operations. One would not think of guessing about an eye operation, for the results of failure is calamity to the patient and loss of prestige to the doctor are too serious to be risked lightly. And yet I am convinced that there is nothing which brings more discredit to the oculist today than glasses carelessly fitted. The danger with all of us is that we shall depend on our experience instead of depending on careful, patient work in coming to our conclusions. Fitting glasses is a tedious nerveracking, time consuming job and anyone experienced or inexperienced who tries short cuts is "pretty apt to lose out in the long run."

It is obviously unnecessary to go over the steps of the examination, for I take it for granted that we all know what they are. Let us first consider the strength of the plus lens

which should be prescribed in hyperopia. I was taught by one of the best men in the country that the examination in all but elderly people should be made under a mydriatic, and that the plus lenses ordered should be from twenty-five to forty per cent less than the amount found. No post-mydriatic test was made. This strength of lens was purely arbitrary and based on the presumption that all patients with a given amount of total hyperopia should be given about the same strength of plus lens. I was told that these lenses might be too strong sometimes, but that it was better to give them and then reduce them later if necessary, for the patient could not be relieved of the eyestrain until the hyperopia which was causing the trouble was very largely corrected. When I tried to put this principle into practice I found that it would not work, that there was no fixed relationship between the total hyperopia as found under the mydriatic and the lenses required to give comfort to the patient.

One of my earliest patients was a woman who had made an expensive trip to a city to have her eyes examined, and when she got the glasses she could not wear them. I found that the strength of the plus lens was only half a diopter too great but when it was reduced she was perfectly comfortable.

The object we have in mind in prescribing plus lenses in hyperopia is to relieve the strain and the accommodative mechanism. Whether we believe Helmholtz's theory as to this mechanism or not, we do know that the accommodation is accomplished in some way by the contraction of the ciliary muscle, and when a person has hyperopia the ciliary muscle it is overworked and becomes exhausted or hypertropic or both. The overstrain on the ciliary muscle depends on two things, the amount of hyperopia and an intangible personal element in the patient which differs in different patients just as does their ability to resist colds and digest pork and beans. The practical question for us to ask is not how much hyperopia has this patient, but how much of it must we correct in order to relieve the ciliary muscle and give comfort to our patient.

The answer which some very good men give to this question is that nearly all of the hyperopia must be corrected if we are to relieve the strain. I believe most of us think otherwise for two reasons: First, this answer is not theoretically correct, and second, it is not practically workable. The ciliary muscle like any other muscle has a large reserve and is capable of much more work than is normally required of it. Just as the biceps can be trained to lift a much greater load than is ordinarily required of it, so the ciliary mus-

*Read before the Eye, Ear, Nose and Throat Section of the Kentucky State Medical Association, Louisville, May 12th, 1927.

etc can do the same. Many people with a high hyperopia are perfectly comfortable so long as no sudden demand is made on their accommodation. If such a hyperope enters college or takes a position as bookkeeper he is very apt to suffer, the amount of the suffering depending on the two factors named and being different for different individuals. If he follows some vocation where he does not have to apply himself to close work he gets along very comfortably without glasses. An adult with two diopters of total hyperopia will have a manifest hyperopia of from one-half to one diopter, seldom more than this. If his total hyperopia is four diopters he seldom has a manifest of more than one twenty-five or one-fifty diopters. The remainder of the hyperopia is taken care of by hypertrophy of the ciliary muscle. We see this hypertrophy if we study microscopic sections of hypertrophic and myopic eyes. When such a person accommodates for close work he must accommodate the three diopters which any normal person must use plus the amount of his manifest hyperopia. The strain comes from the added effort he must make to overcome this manifest hyperopia. If then we correct the full amount of the manifest hyperopia, we have given him the full amount of relief which it is possible for him to get from plus lenses. If we give lenses which are stronger than this we dim the distant vision, the patient is uncomfortable and in most cases will not wear the glasses. In fact, I have never succeeded in persuading a patient to wear glasses which were strong enough to dim the distant vision, though I tried faithfully before I learned that it was neither necessary nor desirable. If we give glasses which just correct the manifest hyperopia the patient is comfortable, wears the glasses gladly and when we test the eyes a couple of months later we find that the rest which we have given the ciliary muscle has led to its relaxation and we can usually increase the strength of the lenses until the patient is wearing from two-thirds to three-fourths of his total hyperopia. This seems to me a much more rational way of handling these patients than to compel them to wear lenses which are uncomfortable hoping that the ciliary muscle will eventually relax to fit the glasses, a thing which it does not always do. These patients who drift to the optometrist and a comparison is made between the cleverness of the optometrist and the oculist to the detriment of the latter. However unfair this may be, it happens too often. It is very difficult to convince the average human that glasses are good for the eyes when the vision is better with the glasses off than with them on. Even if the oculist by virtue of his prestige and insistence is able to persuade the patient to wear the glasses, he has taken the less

effective of two ways to accomplish the result. Just as in business, it is best to follow the slogan, "The customer is always right," so in this matter the patient is always right.

Of course there are some cases of what we call spasm of the accommodation where even with a high total hyperopia there is no manifest hyperopia at all. The patient may even see better with a minus lens. These are the cases which make the examination under a mydriatic so necessary. We often see such patients wearing minus lenses which have been given them by some optician. The eyestrain in such cases may be similar to that which is often found in people who have no hyperopia or visual defect at all. Where no manifest hyperopia is present, I do not believe that glasses will give relief. Such patients must be advised to rest their eyes completely for a long enough time to let them thoroughly relax. Of course it is understood that we are speaking now of simple hyperopia. Where there is astigmatism, muscle imbalance or a hypersensitive retina, cylindrical, prismatic or viopake lenses may be needed to correct these difficulties but not for the hyperopia.

My routine is to do a pre-mydriatic test which gives a reasonably accurate idea of the correction needed. A mydriatic is then used and the eyes refracted accurately with the retinoscope. When the eyes have completely recovered from the mydriatic a post-mydriatic test is made and the patient is given the strongest lenses with which he can see as well as with the natural eye. Where astigmatism is present this is first corrected and a plus lens is given with which he can see somewhat better than with the natural eye. Where the patient has come from a distance and cannot return for the post-mydriatic test I make as careful a determination as possible of the amount of the manifest hyperopia before the mydriatic is used and do not insist on the post-mydriatic test, but I never feel quite as sure of my results as when the post-test is used. Practically the only complaints I have ever had about the glasses which I have fitted have come from those cases where I have for one reason or another neglected to follow this rule.

Another point on which our best men are not agreed is the question of prescribing prisms where there is muscle imbalance. Some men almost never prescribe prisms, and some doubtless prescribe them too freely. In moderate degrees of esophoria accompanied with hyperopia I think it is best to correct the hyperopia as fully as possible and try it without the prism, explaining to the patient carefully what you are doing and telling him that it may be necessary to add the prism later. With higher degrees, that is in those that show the eyes under cover, it is best to add the prisms

to the lenses from the start. Where there is hyperphoria which is shown by repeated examinations to be constant, it should be partly corrected from the start. Just how strong a prism should be used for the correction of hyperphoria is a matter for experience and judgment and cannot be determined by rule of thumb, but I find that good results are usually obtained if about two thirds of the hyperphoria is corrected by prisms. An exophoria will usually require no prism unless it is of rather high degree, for here the muscles lend themselves to rest and exercise much better than in the case of the other phorias. Where an exo or eso-phoria is combined with hyperphoria, I have found the easiest way to arrive at the prism strength and the direction of the base is to put the lenses into the trial frame at the patient's pupillary distance, select the strength of the prism needed, and make the test of the muscles rotating the prisms until one gets the results desired. I think this method is much easier and more free from possible error than to figure it on paper. I have found that it is very easy with my limited mathematical training to get "all tangled up" in trying to work my optical mathematics on paper.

Some men are quite enthusiastic about the results they get by exercises in their phoria cases. Perhaps I have not been patient enough or had skill enough, or perhaps it is because of the fact that most of my work is done among students who must either keep at their work or go home. At any rate I have never succeeded in getting satisfactory results in the phorias by exercises.

Another pitfall is the axis of the astigmatism in elderly people. We are apt to think that the axis does not change after the age of 55 or 60, but this is not always true by any means. I have one patient whose axes have changed from 180, first in one eye and then in the other, until they are now 15 and 165 respectively. As she wears a plus 2.00 cylinder in each eye, she is very sensitive to the least change in her axis. This happens often enough so that it is the part of wisdom to check the axis carefully whenever the lenses are changed in elderly people and even after they have their full reading correction.

Another point that we must watch, especially since most of our patients insist on wearing horn frames, is the pupillary distance. The width of the bridge of the nose determines very largely the pupillary distance of the frame while it has no relation to the pupillary distance of the patient. When the lenses are not very strong this is of little consequence, especially if the prismatic effect produced merely reduces slightly an exo- or eso-phoria, but where the patient wears a

very strong lens, say a plus 2 or 3 for distance and an added 2.50 for near vision, the prismatic effect produced by even a few mm. difference between the eyes and the glasses may make serious trouble. It is best in such cases to put the lenses into the trial frame at the pupillary distance they are to occupy on the face and then test the muscles. We should order them decentered to meet the condition that is found. In any case one should not take it for granted that the prescription has been properly filled, but should carefully check each pair of glasses before they are given to the patient. I have even found the lenses reversed, the right being on the left side and *vice versa*.

One last point: I have not infrequently found people wearing strong cylinders in an eye glass mount with a spring nose piece. In one case where the nose was very narrow the glasses dropped downward until they were nearly ten degrees off the proper axis. The lenses had been fitted by a thoroughly competent man and were a perfect fit as far as the lenses went. The way they were placed on the face made them worse for the eyes than no glasses would have been. Where astigmatic lenses are prescribed one must always explain to the patient the nature of the lenses and the importance of keeping them straight in the frame and on the face. All these little points take time and are easily neglected in the hurry of a busy practitioner.

I once asked a very busy man with whom I was working if it didn't make him nervous to do his work with an office full of people waiting for hours to see him. His answer was the best piece of advice that I have ever had. He said that when a patient got into his inside office he forgot that there were any more outside and gave him all the time necessary to find out and correct what was wrong with him. If the patients in the outside office didn't want to wait they could go elsewhere.

After adopting this as my slogan my work has been much more satisfactory to myself and my patients much better cared for.

DISCUSSIONS.

Joseph D. Heitger, Louisville: Some one said a long time ago that refraction is more of an art than a science. Some of the points made by Dr. Cowley verify the truth of this statement. I am going to try to answer his question, which, if I understood him correctly, is: Why is the manifest hyperopia under a pre-mydratic test plus one, whereas the post-mydratic test in the same individual shows plus sixty-two hundredths. The ciliary muscle is subject to the same sort of physiology in a general way as the other muscles of the body. After a mydratic the muscle has been rested, and as a result there is less latent hyperopia present when the post-mydratic is

made. Again, I think it depends somewhat on the muscular tension of the individual on that particular day. When the ciliary muscle has been at rest there is more latent hyperopia and less manifest. Another factor is that the patient on that particular day may have felt weak or exhausted, and when the post-mydriatic test is made he feels better. Deviations of the manifest hyperopia will be affected more or less by the general tone of the individual at the particular time of examination. This could hardly be said to be due to a cramp or a spasm as such conditions produce more than the difference between plus one and plus sixty-two-hundredths. Dr. Cowley mentioned the fact that certain individuals seem to have a ciliary muscle that is under tension much of the time, and that is the type of case where he finds very little manifest hyperopia. As he has well said, these people require a rest more than glasses. I have found it very useful in this type of case to have the patient instill a mild solution of homatropin, a fourth of one per cent, into the eyes over the week-end. This gives sufficient relaxation over the week-end to carry them through the next week in comfort, provided they have not too much added strain. There are some very prominent oculists in this country who rarely use a cycloplegic except in children, yet these men get accurate results with comfort to their patients. One of the most outstanding of these men is Dr. Walter Lancaster, of Boston, a man whose knowledge of physiologic optics cannot be questioned, and yet he is one oculist who gets excellent results without using a cycloplegic routine. He uses minus cylinders with fogging. The minus cylinders are used in such a way that the posterior focal line is always just slightly in advance of the retina, and as long as he keeps it there he has a method by which he can determine the smallest degree of astigmatism, even as small as one-eighth diopter. There are many patients who have not intelligence enough to notice small deviations, and, of course, in that type of case we do not as a rule find a high tension of the nervous system, and the patient does not require such a fine degree of refraction as the other types with a more sensitive nervous system. There is one type of patient occasionally seen, and all of you are more or less familiar with such cases, where the individual has been fitted with minus lenses by an optometrist. Under examination with a cycloplegic it develops that the patient is really hyperopic. Minus lenses have added that much more of a load on the already almost exhausted accommodation. Dr. Walter Lancaster read an excellent paper before the Southern Medical Association in Chattanooga, Tenn., several years ago, in which he demonstrated mathematically that the extrinsic muscles of the eye are always strong enough to move the eyeballs in all directions, but

that the real thing at fault in muscle errors is due to deviations of neuricity. Alternation of proper muscles and rest do much to correct the discomfort of patients suffering from disturbance of the extrinsic ocular muscles.

J. D. Williams, Ashland: Dr. Cowley has given us a very practical paper, and I am pleased to discuss some of its features. The first thing I want to mention is the use of minus cylinders, to which I am unalterably opposed except in cases where they are found necessary by examination under a cycloplegic. I had an office associate two years ago who insisted upon giving patients minus cylinders. Since he left I have had to replace a great many of them at my own expense, with plus cylinders. The patients cannot wear the minus glasses, they try to do so for a few months and then return. I never use minus cylinders if I can possibly avoid it.

I want to refer for a moment to the excellent paper presented by Dr. Dowden and particularly the remarks made by Dr. Dabney in his discussion. I have had five cases recently in which the importance of the points made by these gentlemen were impressed upon me. One of the patients died recently from renal disease, his glasses were changed by some optician, he told me, four or five times before he died. A glaucoma patient, a short time before her eye was removed, was sold "nerve glasses" by one of these optometrists. Another patient had nephritis with rupture of blood vessels in the eye, with hypertension of 240 or 250. He died within six months. This patient had also been to an optometrist. I have also recently seen three patients with amblyopia from sinus involvement, two of them approaching blindness, who had been fitted with glasses by an optometrist, one of them several times. I mention these cases to show the harm that is being done the public by optometrists, some of whom travel through the country telling the people they are "Eye Specialists," "Government Eye Specialists," etc.

I was very glad to hear Dr. Cowley indict the optometrist. It is to the great shame of the eye man that these people are being called on to attempt to do a much greater proportion of the refractions than, in the public's interest, they should. It is only fair to say, however, that some eye men have such a distaste for refraction that their work is sometimes so unsatisfactory as to justify patients seeking the services of some optician who is really interested in his work, notwithstanding the great harm that may befall the patient because of the optician's absolute ignorance of the eye and such pathological conditions as may affect it.

M. C. Baker, Louisville: Dr. Cowley has given us a splendid paper on an interesting subject. There are a few points I would like to emphasize. The lenses we prescribe should be ground by the best optical company we can find. I be-

lieve we should insist upon this. We should also demand the best fitters they have. We ought to have more to say about the frames than we do, and this is particularly true of the so-called horn frames, some of which cannot be adjusted to suit the eyes. I think this is the cause of a great deal of the dissatisfaction with glasses.

Another important point is that we must have the thorough confidence of the patient and be able to assure him that he is being properly treated. The optometrists have all the egotistical self-assurance in the world, this being one of their greatest assets. We must let our patients understand that we know the exact nature of their trouble and can absolutely remedy it. Not only must we check the lenses after they have been ground, to be sure they are correct as Dr. Cowley has said, but we must tell the patient to try the glasses for two or three weeks and if they are not entirely satisfactory to report to the office for further observation. If the patient returns somewhat dissatisfied, it is well to carefully check the eyes again. Then if we find a mistake was made in our previous examination, it is our duty to have another pair of lenses ground without expense to the patient. I think by handling the matter in that way we will make more by it in the long run.

Oftentimes deciding upon the proper lens is not only a matter of science but also a matter of common judgment; we cannot always compel the patient to wear what we think he ought to wear. For example, a patient may actually take a three-plus lens, yet when this is prescribed and he wears it a week or two he returns dissatisfied and when weaker glasses are ordered he wears them with complete satisfaction. Another patient of the same age and same occupation appears and after refraction we prescribe the same lens as the first patient. That same patient may get perfect satisfaction with what the first patient refused to wear. We must deal with the patient as an individual and base our findings and conclusions on our best judgment. We ought to follow our patients and give them every assurance that they are absolutely to be taken care of and the right remedy provided.

W. P. Drake, Bowling Green: It has been my observation in recent years that the less we try to overdo the matter of prescribing strong spherical lenses the better for our patients; many people get along just as well with a weaker correction, and are decidedly more comfortable.

I do not know that I properly understand the doctors idea about prescribing minus cylinders. Of course if the patient has myopic astigmatism it should be corrected, otherwise I do not see any benefit to be derived from wearing a minus cylinder. Personally, I feel that all astigmatic errors should be corrected, but only to the extent as to the lens with which the patient sees best and is most comfortable.

There is another point I am sorry was not mentioned, and that is should we give small spherical lenses, even as low as 50, to a patient without astigmatism? Will the patient receive the proper benefit from such lenses?

Furthermore I believe there has been too much prescribing of colored or so-called crooked lenses, for photophobia and other irritating eye symptoms. Such patients to my mind are suffering from some focal infection or faulty metabolism.

Charles K. Beck, Louisville: Most of us have heard of the term muscle-bound. It simply means decreased elasticity from overuse. The muscle cannot perform the proper amount of work. I have noticed this personally. I played hand-ball at the Y. M. C. A. every afternoon for quite a long period of time. I noticed my game was not quite as good as usual, and one of the men with whom I was playing suggested that maybe I was getting "muscle-bound." I then began playing less frequently, every other day or semi-occasionally, and my game improved and more benefit was derived from the exercise.

In my opinion this is the answer to the question asked by Dr. Cowley. The hypertrophied, over-strained ciliary muscle shows certain findings in a pre-cycloplegic test. The cycloplegic is used and the muscle gets some rest. Then when the post-cycloplegic test is made it is found the muscle is able to more work, the manifest hyperopia is less, and the eye does not need as strong lens as before. I believe that is the proper explanation.

Some of the previous speakers have referred to optometrists, and the statement has been made that we are losing a great deal of our work to them. It has been said that much of the refraction work is being done by optometrists. I am not sure that we are at the present time losing any business to them in this locality, but I feel some are going because we use "drops." Dr. Heitger mentioned the fact that many men throughout the country are not using cycloplegics and are getting good results. To my mind the question is, why should we use them? I know many of us think we ought to use them, and do use them regularly. I still use cycloplegics occasionally, but have regarded them as unnecessary in the majority of cases, and believe that is the trend throughout the country today. In another twenty-five years I think we will seldom use cycloplegics in refraction work. There are a great many people who object to having their pupils dilated, and these are the ones who are going to the optometrist to get their glasses. We may be losing some business on account of it.

Whatever method you employ, if you use it correctly, you will get about the same results, and I feel we will have fewer people complaining about their glasses being unsuitable and claim-

ing inability to wear them if we will employ cycloplegic less and fogging more.

C. DeWeese, Lexington: Dr. Cowley has presented a splendid paper. I do not know of anyone who has had an opportunity to study the eye more than he has. Living near him and coming in contact with him as I have on a number of occasions, I would feel some hesitancy in suggesting anything to him in regard to refraction; and certainly I would hesitate to try and make answer to his question about variation in the ciliary muscle before and after using a cycloplegic. I believe he uses this method quite extensively. I think he dilates the pupil in practically all his patients. Personally it seems to me a most excellent method, and certainly I do not see how we are going to get away from it in children and in early adult life. I do not know just how anybody is going to fit glasses for a child without using a cycloplegic. I cannot do it with satisfaction to myself, and I use a cycloplegic in a great number of my cases. It is my custom to make three examinations, one before the use of a cycloplegic, then under the cycloplegic, then check the results afterward. There is only one objection that I can see to the use of cycloplegics in early adult life, that is it takes a little more of the time of the business or professional man, because he is literally "put out of the running" for a few hours if the method is correctly applied. I have never been able to get away from it, nor have I noticed any such trend on the part of others. I think it is the proper thing to do.

Dr. Cowley has given us a wonderful paper and I am sure we have all appreciated it.

R. H. Cowley, Berea (in closing): None of the gentlemen who discussed my paper has offered a satisfactory answer to my question. This is what I have found, and I have confirmed it over and over again: A person takes a plus-one in the pre-mydratic test, and will only accept a plus .62 or .75 afterward. This is so common that it is almost the universal rule. As the majority of you are aware, I deal almost exclusively with people from fifteen to twenty years of age.

In regard to not using a cycloplegic: If I were a rich man I would give almost anything to someone who would show me how to fit glasses in young people without using a cycloplegic. We have between twelve hundred and thirteen hundred students at Berea College every year who have perhaps not been away from home before. I have all the refraction work to do, and I have tried every method I could to avoid using a cycloplegic. Since I have adopted the plan of using a cycloplegic and making a pre-mydratic and post-mydratic test, I have had no trouble.

ENDOSCOPY WITH ANALYSIS OF CASES.*

By GAYLORD C. HALL, M. D., Louisville.

Endoscopy, the visual inspection of the air and food passages, has developed greatly during the past few years. A number of factors have contributed to this. First, better instruments; the lights are more reliable; the working space has been increased in the latest models and the continuous suction tubes fitted into the instruments has contributed much to the ease of the examination. There has been greater facility in the use of the instruments and better understanding of the mechanical problems involved in the solution of the cases.

The more frequent use of the instruments has of necessity developed a better technique and wider fields of application has been the result.

Incidentally, there has been a better reading of the signs and symptoms in suspected cases of trouble so that there has developed a fairly accurate symptomatology in these cases. This applies to the history, the physical examination, and the reading of the x-ray plates.

It may be of interest to detail the signs and symptoms in groups as given by Dr. Jackson in his book on Bronchoscopy and Esophagoscopy.

ESOPHAGEAL FOREIGN BODY SYMPTOMS.

1. There are no absolutely diagnostic symptoms.

2. Dysphagia, however, is the most constant complaint, varying with the size of the foreign body, and the degree of inflammatory or spasmodic reaction produced.

3. Pain may be caused by penetration of a sharp foreign body, by inflammation secondary thereto, by impaction of a large object, or by spasmodic closure of the hiatus esophagicus.

4. The subjective sensation of foreign body is usually present, but can not be relied upon as assuring the presence of a foreign body for this sensation often remains for a time after the passage onward of the intruder.

5. All of these symptoms may exist, often in the most intense degree, as the result of previous violent attempts at removal; and the foreign body may or may not be present.

SYMPTOMS OF LARYNGEAL FOREIGN BODY.

1. Initial laryngeal spasm followed by wheezing respiration, croupy cough, and varying degrees of impairment of phonation.

2. Pain may be a symptom. If so, it is usually located in the laryngeal region, though

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in some cases it is referred to the ears.

3. The larynx may tolerate a thin, flat, foreign body for a relatively long period of time, a month or more; but the development of increasing dyspnea renders early removal imperative in the majority of cases.

SYMPTOMS OF TRACHEAL AND BRONCHIAL FOREIGN BODY.

1. Tracheal foreign bodies are usually movable and their movements can usually be felt by the patient.

2. Cough is usually present at once, may disappear for a time and recur, or may be continuous, and may be so violent as to induce vomiting. In recent cases fixed foreign bodies cause little cough; shifting foreign bodies cause violent coughing.

3. Sudden shutting off of the expiratory blast and the phonation during paroxysmal cough is almost pathognomonic of a movable tracheal foreign body.

4. Dyspnea is usually present in tracheal foreign bodies, and is due to the bulk of the foreign body plus the subglottic swelling caused by the traumatism of the shiftings of the intruder.

5. Dyspnea is usually absent in bronchial foreign bodies.

6. The respiratory rate is increased only if a considerable portion of lung is out of function, by the obstruction of a main bronchus, or if inflammatory sequelae are extensive.

7. The Asthmatoïd Wheeze is usually present in tracheal foreign bodies, and is often louder and of lower pitch than the asthmatoïd wheeze of bronchial foreign bodies. It is heard at the open mouth, not at the chest wall; and prolonged expiration as though to rid the lungs of all residual air, may be necessary to elicit it.

8. Pain is not a common symptom, but may occur and be accurately localized by the patient, in case of either tracheal or bronchial foreign body.

EARLY SYMPTOMS OF IRRITATING FOREIGN BODY SUCH AS A PEANUT KERNEL IN THE BRONCHUS.

1. Initial laryngeal spasm is almost invariably present with foreign bodies of organic nature, such as nut kernels, peas, beans, maize, etc.

2. A diffuse purulent laryngo-tracheo-bronchitis develops within 24 hours in children under two years.

3. Fever, toxemia, cyanosis, dyspnea and paroxysmal cough are promptly shown.

4. The child is unable to cough up the thick mucilaginous pus through the swollen larynx and may "drown in its own secretions" unless the offender be removed.

5. "Drowned lung," that is to say natural

passages filled with pus and secretions, rapidly forms.

6. Pulmonary abscess develops sooner than in case of mineral foreign bodies.

7. The older the child the less severe the reaction.

SYMPTOMS OF PROLONGED FOREIGN BODY SOJOURN IN THE BRONCHUS.

1. The time of inhalation of a foreign body may be unknown or forgotten.

2. Cough and purulent expectoration ultimately result, although there may be a delusive protracted symptomless interval.

3. Periodic attacks of fever, with chills and sweats, and followed by increased coughing and the expulsion of a large amount of purulent, usually more or less foul material, are so nearly diagnostic of foreign body as to call for exclusion of this probability with the utmost care.

4. Emaciation, clubbing of the fingers and toes, night sweats, hemoptysis, in fact all of the symptoms of tuberculosis are in most cases simulated with exactitude, even to the gain in weight by an out-door regime.

5. Tubercle bacilli have never been found, in the cases at the Bronchoscopic Clinic, associated with foreign body in the bronchus.

The exceptional case has at last been encountered. A boy with a tack in the bronchus was found to have pulmonary tuberculosis.) In cases of prolonged sojourn this has been the only element lacking in a complete clinical picture of advanced tuberculosis. One point of difference was the almost invariably rapid recovery after removal of the foreign body. The statement in all of the text-books, that foreign body is followed by phthisis pulmonalis is a relic of the days when the bacillary origin of true tuberculosis was unknown, hence the foreign body phthisis pulmonalis, or pseudo tuberculosis, was confused with the true pulmonary tuberculosis of bacillary origin.

6. The subjective sensation of pain may allow the patient accurately to localize a foreign body.

7. Foreign bodies of metallic or organic nature may cause their peculiar taste in the sputum.

8. Offensive odored sputum should always suggest bronchial foreign body; but absence of sputum, odorous or not, should not exclude foreign body.

9. Sudden complete obstruction of one main bronchus does not cause noticeable dyspnea provided its fellow is functioning.

10. Complete obstruction of a bronchus is followed by rapid onset of symptoms.

11. The physical signs usually show limitation of expansion on the affected side, impairment of percussion, and lessened trans-

mission or absence of breath-sounds distal to the foreign body.

In the handling of a suspected case three things are essential. First, the taking of a very careful history. This applies not only to the immediate symptoms but should be carried back, it may be over a period of several years. Careful questioning of the parents will often elicit important information regarding the possible ingestion of a foreign body they had considered of no importance whatsoever.

After the history, a careful physical examination should be made, especially in suspected disease of the air passages. This should preferably be done by an internist, though one may get much valuable information with the careful use of the stethoscope, percussion, and palpation.

Finally careful x-ray examination should be conducted. This will show foreign bodies if of greater density than the bones of the patient and may disclose valuable information regarding the presence of emphysema or collapse of the lung distal to the suspected obstruction, or disclose the "drowned lung" present in abscesses or other conditions.

There are few if any contraindications for instrumentation, though in case of aneurysm one naturally would not be inclined to resort to this method. It is well to remember that there should be a definite time limit to these seances. Certainly not over forty-five minutes and better thirty minutes, and it is well to impress upon both the patient and the family physician the fact that whereas one may be unsuccessful the first time the case may be successfully solved at a second or third instrumentation. In fact, it is much better to have several short sessions than one session unduly prolonged.

In general it may be said that prompt instrumentation in these cases is highly desirable and the sooner the better. It should be remembered, however, that when one skilled in the use of these instruments is not immediately available and the patient is subject to much dyspnea it is far better to do a tracheotomy to relieve the dyspnea if possible and the consequent strain on the heart than to exhaust the patient's vitality through a long continued dyspnea.

It must not be assumed that the extraction of foreign bodies does or should make up the bulk of this work.

It is valuable for diagnosis of various obscure conditions and may be the only method by which a diagnosis can be made. In the oesophagus difficulty is swallowing, regurgitation of food calls for a diagnostic oesophagoscopy. In the air passages, hemorrhage or blood stained sputum not otherwise account-

ed for; persistent dyspnea; discharge which is persistently negative for tubercle bacillus call for diagnostic bronchoscopy.

Jackson and others have diagnosed tumors of the air passages and in some cases removed them when in a favorable situation.

In treatment the method of dilation in obstructive disease of the oesophagus is notable.

As a method of treatment in the air passages the removal of diphtheritic membrane as practiced by Lynch and one of our own members. The pumping out of drowned lung in acute edema and the aspiration of pulmonary abscesses when recent indicates an ever broadening field in its application.

Coming to the analysis of my own cases we find: Total cases, 126; bronchoscopies, 45; oesophagoscopies, 81. Of the bronchoscopies thirty were for foreign bodies; fifteen for suspected foreign body which was not there or for other conditions.

In this series there were four deaths. One on the table; cause not determined. Two within twenty-four hours after removal of the foreign body, due to severe infection present at the time of operation; one was a peanut case, the other a nut shell. One in about nine months after the accident, due to non-removal of foreign body.

There was one failure to remove a foreign body, a small pin in the deeper part of the lung. Only one attempt was allowed, the patient dying some months later of septic condition in the lung.

In only one case was lower bronchoscopy necessary.

There were two cases of chronic edema of the larynx.

Two abscesses of the lung.

In three cases the foreign body was coughed up.

There was one tumor in trachea, and one carcinoma of larynx.

The nature of the foreign bodies was as follows: Corn, ten cases. Peanuts, four. Beans, four. Watermelon seeds, two. Nut shells, two. Button, screw, safety pin, cockle burr, nail, glass bead, metal tag, and straight pin, one case each.

The oesophagostomies were distributed as follows: Forty-three were for foreign bodies. Thirty-eight were for suspected foreign bodies not found or for other conditions.

There were no deaths. This serves to contrast with the bronchoscopies.

In one case only did we fail to remove the foreign body, one attempt only being allowed.

There were nineteen cases of stricture of the oesophagus. Six of these were spasmodic; thirteen were organic. Of the thirteen cases of organic stricture the cause was as follows: Lye or other chemical, six. Malignant, three.

Congenital-syphilitic, typhoid, one each. One not determined, though it was probably syphilitic. One diverticulum of oesophagus. There was one case of peptic ulcer near the cardia. One case of dysphagia without assignable cause. There were twelve cases of cuts and abrasions of the oesophageal wall due to foreign body that had passed on, leaving an oesophagitis.

The character of the foreign bodies was as follows: Bone, eleven cases. Coins, seven cases. Meat, four cases. Safety pins, six cases. Peach with part of seed, three cases. Button, two cases. Seeds, two cases. Tooth plates, two cases. Nut shell, egg shell, china, collar button, screw, straight pin, each one case. One case of congenital atresia of oesophagus communicating with trachea.

The following case reports will serve to illustrate the various types of trouble.

E. F., aged 2 1-2 years, seen 10-o-23. Patient has stricture of the oesophagus following lye burn. Had been previously treated by Dr. Pirkey and was getting along satisfactorily until he swallowed a pawpaw seed which lodged above stricture, completely blocking the oesophagus. Patient seen at Childrens Hospital. Pawpaw seed removed and stricture dilated. Subsequent dilations at three months intervals. Patient discharged after a year and a half.

R. L., aged 13 years, Carrollton, Ky., seen 2-8-22. Two days ago sucked portion of a .32 caliber bullet into right bronchus, which was located by Dr. Donaldson of Carrollton with the x-ray. Picture sent down with patient. Temperature 99.8° F. Pulse 96. No rales in chest. Air to both sides equally. Patient claimed that he coughed up bullet while coming down on train. Fluoroscopic examination shows chest clear. Bullet discovered in lower pelvis. X-ray plate confirms findings. No operation.

I. C., aged 8 years, Corbin, Ky., seen 6-21-24. Patient has particle of button in the lung. Has been present for six weeks; has intermittent periods of high fever, cough, and abundant expectoration followed by amelioration of symptoms. X-ray examination shows slight shadow on the right side. Bronchoscopy: Button seen in right bronchus. Seized with forceps several times but slipped off at level of cords. On last attempt it was thought that particle was drawn up in mouth and swallowed. Complete absence of all symptoms for ten days. Second bronchoscopy ten days later. Discovered button in right bronchus; removed without difficulty.

D. B., aged 8 years, Irvine, Ky. Seen 3-13-23. Several days ago sucked a bead into left bronchus. Has very little reaction. Occasional cough; slight cyanosis; breath sounds

heard in both lungs with slight impairment on the left side. Bronchoscopy showed bead in the left bronchus. Neither forceps nor hooks could be passed beyond bead. Beginning edema above. After thirty minutes work the attempt was abandoned. Four days later second attempt made without success. Four days later third attempt, at which time bead was successfully extracted by means of a special screw arrangement which fitted into the hole of the bead. Recovery.

E. F. T., aged 10 months, seen in consultation with Dr. Wolfe 11-24-24. Child had always been healthy. Mother stated that baby had a coughing spell while playing on the floor. Symptoms were but momentary, but Dr. Wolfe was called. Patient brought to hospital by Dr. Wolfe and x-ray picture taken, which was negative for foreign body. There were no localized symptoms and no difficulty in breathing. It was thought that a bronchoscopic examination under the circumstances was not justifiable. Patient seen twenty-four hours later. Child's condition was precarious. Marked cyanosis with great difficulty in breathing together with rapid respiration. Considerable laryngeal edema was present. A bronchoscope was passed beyond locating a foreign body at the bifurcation of the trachea. Dr. Wolfe did a tracheotomy with bronchoscope in position. A rather large particle of hickory nut shell was removed through the bronchoscope. Child left the table in good condition. The following morning at 2 o'clock I was called by the nurse on account of the difficulty in breathing. On reaching the hospital the child was breathing quietly and the pulse was of good volume. Air was entering freely on both sides of the lungs. The tube was cleaned and changed and there was apparently no difficulty present. At 5 o'clock that morning the child went into sudden collapse and died, the cause of death not being determined though apparently it was due to a sudden dilatation of the heart as the nurse had stated that there was no interference with breathing up to the time that the collapse came. Efforts at resuscitation carried on for over an hour were unavailing. This case illustrates the poisonous qualities of nut kernels and shells and the necessity for early, prompt intervention even in the temporary absence of symptoms. I believe had bronchoscopy been done on this child twenty-four hours earlier we would have probably have had a successful result.

M. E. R., aged 5 years, seen 3-20-25. This patient was also referred by Dr. Wolfe the history being that four weeks previously was thought to have aspirated some glass beads into her lungs. Since that time she has been hoarse, had coughing attacks, irregular fev-

er, and rapid pulse. Has complete aphonia. X-ray examination of the chest was negative. Physical examination of the chest was likewise negative. Patient has rather large, prominent tonsils and adenoids. Bronchoscopy shows marked edema of the larynx with negative findings as to the lungs. The patient's dyspnea increasing a tracheotomy was done twenty-four hours following the bronchoscopy, a tube inserted and left in place for ten days at which time a direct laryngoscopy was done which showed the edema of the larynx as before. Careful search was made for the presence of a foreign body in the ventricles of the larynx but none was found. Leaving the tracheotomy tube in position it was decided on consultation with Dr. Wolfe that the best thing to do would be to remove the tonsils and adenoids inasmuch as no other explanation for the continued edema could be found. This operation was performed by Dr. Wolfe. Two weeks later another laryngoscopy was performed at which time it was seen that the edema of the larynx had entirely disappeared. The tube was then removed and the patient kept under observation but she has remained perfectly well.

L. T. N., aged 64 years, Columbia, Ky. Seen 12-3-25. Patient was referred to me by Dr. Irvin Abell with the following history: that four weeks before while going up a hill he had pulled off a twig from a cedar tree and put same in mouth; suddenly taking a deep breath through the mouth he had aspirated these twigs and spines into the lung. Has had much cough, considerable dyspnea and irregular fever; profuse, fetid expectoration. Was sent to hospital and bronchoscope passed, the pathology being entirely located in the left lung. Much necrotic tissue and considerable pus aspirated. No trace of spines or twig could be seen at first bronchoscopy. Much improvement resulted from the first treatment. The second bronchoscopy was done a week following. The edema of the lung tissue was much less as well as the expectoration and odor. Following the second bronchoscopy patient in a fit of coughing during the night coughed up considerable number of cedar spines, after which the condition of the lung greatly improved.

The third bronchoscopy was done in another week, which showed the lung clearing rapidly, the necrotic material having practically disappeared and very little pus was present. The physical examination of the chest also showed the absence of rales and the return of the resonant percussion not over the affected area of the left side. Patient was sent home with pulse and temperature normal, practical absence of expectoration, and feeling greatly improved.

DISCUSSION.

S. B. Marks, Lexington: Dr. Hall has introduced a very broad subject, and I have certainly enjoyed his paper. We do not see enough such cases and each presents its own problem. A careful history is a feature which cannot be too strongly emphasized, particularly the fact that a foreign body has been inspired which has passed entirely through the larynx; the first symptom that occurs after the inspiration is an expiratory cough, and if careful history is obtained this type of cough will be shown to have occurred.

In studying the roentgen-ray plate there are several things to be kept in mind. Dr. Manges who is connected with the Jackson Clinic has probably done more than anybody else in this country toward the development of a proper x-ray study in these cases. He describes several types of cases which show different findings. One type he calls "ball-valve" obstruction. In such cases the foreign body becomes lodged in the bronchial tree and emphysema occurs in that portion of the lung because of imprisoned air as is shown in the roentgen-ray picture. In those cases he takes a picture not only on inspiration but also on expiration, thus flattening the normal lung as much as possible and increasing the shadow of the emphysema-block on the other side. We have found his studies and suggestions very valuable.

As to the cases in which tracheotomy is demanded: Most of my tracheotomies—I think I have had only two—have been in cases where I could not remove the foreign body. In both instances the foreign body was an open safety pin. Some authors recommend tracheotomy in every instance where a protein body is present because of the very extensive tracheo-bronchial secretion which will strangle or drown the child if it is not done. In doing a tracheotomy the wound is held open by sutures and the suction apparatus used. This will often bring away the foreign body with the secretion, or it may be removed through the tracheotomy wound. I had one such case in which tracheotomy had been done eight hours before I saw the child. He was almost dead at the time. The first thing I did was to apply the suction apparatus to get rid of the excessive secretion, and then removed through the tracheal wound a bean which had become impacted in right second division bronchus. If I had not used suction first I am sure the child would have died.

One thing we have found very valuable in esophageal foreign bodies is the use of a bismuth capsule. We use an ordinary capsule holding ten grains of bismuth which lodges and shows the absolute location of the foreign body.

We have made a few studies with lipiodol. One case was of great interest to me. This patient was seen with Drs. McClure and Scott, a

boy of 18 with a history of a severe attack of measles at 13, followed by a constant cough with expectoration. Dr. Scott thoroughly examined him for evidences of tuberculosis with negative results. The boy had profuse hemorrhages from the lung, he was greatly depleted in health and strength. I dilated an abscess cavity which was found in the right lung and injected argyrol. After six or seven weekly treatments he became very much better, but still had his cough and an occasional hemorrhage. During a paroxysm of coughing he ejected the vertebra of a bird. We found lipiodol valuable in locating the site of obstruction and abscess.

Gaylord C. Hall, Louisville (in closing): The point made by Dr. Marks in regard to imprisoned air in the lungs where the foreign body is lodged in the bronchial tree, and the development of emphysema in that portion of the lung, is very important. He also mentioned another feature which should be emphasized, namely the application of suction to tracheotomy wounds. Instead of trying to make the patient cough and thereby expel the secretion, suction apparatus should be placed into the trachea and suction applied, taking care to move the suction tube back and forth rather than leaving it in one place, and it is often surprising the amount of material that can be obtained.

Of course this work is difficult. The chief drawback I have found in the work over a period of several years is that we see patients so late. For example, in cases of foreign bodies, instead of seeing the patients immediately after the accident has occurred, it is sometimes anywhere from three or four days to three or four months before the patients are referred to us, and definite changes have then occurred placing the patients at a definite disadvantage. If there is one thing I would like to emphasize more than another in this work, it is to give us a chance to see these patients early; do not delay until the diagnosis is unmistakable and definite pathological changes have taken place. The patient would be infinitely better off if in suspected cases we were given an opportunity to clarify the diagnosis. Neither bronchoscopy nor esophagoscopy in itself carries with it any practical danger and no mortality. If we have found no pathology we have done the patient no harm and only minor amount of discomfort in employing the only method by which a definite diagnosis can be made, and I would urge that we be permitted to see these patients earlier.

ACUTE PANCREATITIS: REPORT OF THREE CASES.*

By **L. WALLACE FRANK**, B. A., M. D., F. A. C. S, Louisville

Of the acute catastrophies occurring within the abdomen, there is none so serious nor is there any in which the mortality is higher than in acute hemorrhage pancreatitis. The disease makes its appearance suddenly and is characterized by sharp pain in the abdomen associated with persistent vomiting. On account of the latter, most of the cases are diagnosed intestinal obstruction.

Acute pancreatitis is supposed to be due to regurgitation of bile into the duct of Wirsung or Santorini. The following cases illustrate the mode of onset and the usual result of this disease:

Case I. Mr. F., aged 53, was referred to us June 18th, 1926, on account of pain in the abdomen. He gave the history of having felt well except for occasional indigestion during the past three months. The indigestion was characterized by a feeling of fulness after meals and belching. Two or three days ago he had several sharp pains in his upper abdomen. They were not very severe and he did not consult a physician. Night before last he developed severe pain in his upper abdomen and vomited several times. No blood. Yesterday he felt somewhat better, but at noon today he became worse, he felt weak, and his abdomen became distended. Several enemas were given with no result.

Examination showed a fat, shock-neck man, breathing with difficulty, and apparently very sick. His heart was normal except for rapidity. Lungs normal. The abdomen was greatly distended and there was general abdominal tenderness more acute in the right iliac fossa and in the upper abdomen to the right of the midline. Slight general rigidity. No masses. Peristalsis not heard. Blood count showed 12,900 leucocytes, 92 per cent polymorphonuclears.

The patient was operated upon with the diagnosis of perforated duodenal ulcer and when the abdomen was opened it was found to be filled with bloody fluid. There was extensive fat necrosis throughout the omentum. The stomach, liver and duodenum were normal. The gall bladder was greatly distended, but no calculi were palpable. The pancreas was large, hard, and hemorrhagic. A drainage tube was placed down to the pancreas through the gastrocolic omentum, a second tube placed in the foramen of Winslow, and another drain placed through the gastrohepatic omentum down to the pancreas. The

*Read before the Louisville Medico-Chirurgical Society.

abdomen was then closed. The patient died within thirty hours.

Case II. Mr. M., aged 55, was first seen by us the morning of April 18th, 1927, with the history that ten years ago he had an acute attack of upper abdominal pain which was diagnosed as duodenal ulcer possibly perforated. He was treated medically and recovered. Five years ago he had a similar attack, not quite so severe. Other than that he had felt well except for an occasional distension with gas.

Three days before we saw him he developed acute discomfort in the upper abdomen. His suffering was not very intense and there was no vomiting the first day. The next day his discomfort increased, he began vomiting within a few hours, and peristalsis ceased. An enema gave no result. Vomiting was not projective in type and consisted of small quantities of fluid regurgitated into the mouth. He became weaker, the pulse rate increased, and upper abdominal pain became worse.

Physical examination showed a rather short man, somewhat fat. Pulse 112 to 118, temperature 100.5° F. Leucocyte count 12,000. He was admitted to hospital with the diagnosis of intestinal obstruction. Examination of the abdomen at that time showed some peristalsis.

With the foregoing as the pre-operative diagnosis, the abdomen was opened early the following morning. There was some blood-tinged fluid in the lower abdomen. Incision was made to the right of the umbilicus under the belief that the trouble was located in the lower abdomen. There was decided evidence of inflammation throughout the cavity and in one area the intestine was collapsed. Numerous areas of fat necrosis were found. The upper abdomen was examined. The gall bladder was small, contracted well under the liver, and contained probably a dozen small calculi, each about the size of a BB shot. The pancreas, including the entire body almost to the tail, was three times the normal size and quite hard. A drainage tube was placed in the gastrohepatic region, the gall bladder was drained, no attempt being made to remove the calculi, and the man was returned to bed. He died within twenty-four hours.

In both the foregoing cases the post-operative diagnosis was acute pancreatitis.

Case III. Mr. E., aged 62, was first seen by us September 25th, 1926. He had complained of pain in the upper abdomen and the diagnosis of gall bladder had been made. Operative intervention was advised. He gave the history of gaseous indigestion and pain in his upper abdomen. At one time the pain was so severe that he went into collapse. Vomiting was always present. He recovered

from the attack, but had a recurrence two months later, and then came to Louisville. It was during his stay in the hospital that he had an attack of terrific pain in which he became cold and clammy, pulse rapid, and vomiting incessantly.

In this case we made the diagnosis of acute pancreatitis. Arrangements were completed to operate upon him two days later, and he had another attack while we were getting him into condition suitable for operation.

Operation disclosed a rather recent cholecystitis, showing evidence of some leakage with adhesions, the gall bladder was much thickened showing evidence of previous disease. The pancreas was two and a half times the normal size and rather hard. Drainage was instituted and the patient made an uneventful recovery. In this case there was no fat necrosis in the abdomen. The drainage tube remained in situ for three months, and since then the man has gained twenty-five pounds in weight and looks better than he has in twenty years.*

Since the foregoing report this patient has been reoperated and the gall bladder removed. At this operation examination of the pancreas revealed it to be of normal size and of normal consistency. He made a good operative recovery and since then, which is about four months now, he has remained entirely well.

My reason for reporting these cases is that we see a great many individuals whose history shows that they have had attacks of pain due to the presence of gall stones and apparently recovered under medical treatment. These cases illustrate the point that we must not consider gall stones, when definitely shown to be present, as being an innocent disease. The potentialities for harm are very great. I have mentioned two men whose lives were lost. In one case the diagnosis was not made, but if the patient had sought medical advice I do not believe there is any question that the diagnosis would have been made clear. In the other case the diagnosis of gall stones was made. Certainly by a careful study, test meals, roentgenographic examination, etc., the diagnosis can be correctly made in the majority of cases. Had these two patients been operated upon early, there is little question that they would have been living today.

The third case, fortunately, was diagnosed early as gall bladder disease, and the patient sought medical advice soon enough for something to be done. He had acute pancreatitis, but it had not progressed to the point where there was any definite hemorrhage into the pancreas, and there was no fat necrosis. In this case surgery afforded complete relief.

Gall stones themselves may be innocent enough, and while it is perfectly true that quite frequently patients come to operation for other lesions where gall stones are unsuspected and are found present, yet in individuals having gall stones there is always the possibility of acute pancreatitis to say nothing of the possibility of carcinoma or secondary chronic pancreatitis.

The reported cases with the end-results of gall stones illustrated show that gall bladder disease is not such a benign condition as we might suppose, and that while gall stones may be silent at the same time their presence is fraught with a great deal of danger to the individual.

DISCUSSION.

James W. Bruce: I do not know much about acute pancreatitis from actual experience, but the case reports by Dr. Frank are very interesting. I would like to know as a matter of information whether trauma can produce acute pancreatitis. I am reminded of a case my father had when I was a medical student, and I had occasion to investigate the literature of the subject at that time. A man was in a railroad wreck and a day or two later developed symptoms of acute pancreatitis. This diagnosis was made by Dr. Louis Frank who operated upon the patient. The man later died and the medico-legal question arose whether trauma could cause acute pancreatitis.

Ben Carlos Frazier: I want to emphasize one of the points made by Dr. L. W. Frank, i. e., that gall stones are not as innocent or harmless as we have formerly believed. In my opinion every individual who has gall stones should be subjected to surgical treatment. I have under observation at the present time two patients who have gall stones, the diagnosis having been made a year ago, yet they cannot seem to bring themselves to the point where they will consent to operation. One of the patients has been examined in California and many other places and is fully aware that he has gall stones. It is a difficult matter to tell these people that they must be operated upon, because our reputations may be jeopardized should unfavorable results ensue. It is true that some of these patients apparently get well without surgery, but, as Dr. Frank has stated, gall stones are always fraught with danger.

J. Rowan Morrison: I have enjoyed Dr. Frank's report very much. When there exists definite evidence of pathology, when the diagnosis of gall stones or a chronically infected gall bladder can be made, I believe it would be bad practice not to subject the patient to surgical treatment. My observation has been that people with chronic gall bladder disease have not done very well, and after they have had several acute exacerbations of cholecystitis and pan-

creatitis has developed, they are very poor operative risks. My experience has been that when the surgeon operates upon a person with acute cholecystitis with possible pancreatitis, he is dealing with a very sick patient. On the other hand, while I do not wish to criticize the surgeon, it is well known that some of these patients get well without operation. However, when there exists definite disease of the gall bladder, I believe we should use our best efforts to persuade such patients to have the pathology removed while they are in the operable zone. My own experience has been that whether gall bladder drainage is employed or not, and it is a fact that this method may relieve the patient for a time, that the majority of people with gall bladder disease have to be operated upon sooner or later. I consider Dr. Frank's point well taken, and I always advise my patients to be operated upon while they are still in the operable zone.

J. A. Flexner: Dr. Frank's report emphasizes a very interesting feature, and that is the close relationship between gall bladder disease and pancreatitis, which has been so beautifully demonstrated in the lower animals. The statement made by Mayo several years ago about innocent gall stones is true; there are no innocent gall stones, and an infected gall bladder is always a potential source of danger to the patient.

I think the reason one of Dr. Frank's patients recovered was that he did not have sufficient distribution of pancreatic juice in the abdominal cavity to produce extensive fat necrosis.

Oscar Bloch: Dr. Frank's report is very interesting. It brings to mind an early experience of mine which may be worth relating. A woman had a typical attack of gall stone colic, with jaundice, and there was no question about the diagnosis. I was young in practice then, and she wanted to consult an older physician, so she went to see the late Dr. J. W. Irwin who told her he could effect a cure by the administration of medicines. Eighteen months afterward the woman died of carcinoma of the liver. This circumstance emphasized the fact to me that gall stones may cause enough trouble to produce death. I had an idea even then that the presence of gall stones may be an etiologic factor in the production of carcinoma of the liver or adjacent organs.

Louis Frank: I have probably seen in my experience between fifteen and twenty cases of acute hemorrhagic pancreatitis. After the first one seen, the most of them we have been able to diagnose; in other words, we have diagnosed pre-operatively those presenting in their symptomatology anything classical. We have also observed a number of cases which were not hemorrhagic.

In the second case reported we did not be-

lieve the man had an organic obstruction, and I think I so expressed myself prior to operation. There was absolutely no peristalsis, so indicative of organic obstruction, nor did he have distension, and there was absence of elevation of temperature such as characterizes organic obstruction of any duration. However, he did have an obstruction, but what was the definite cause I did not then know. The man was desperately ill and we recognized that an operation was necessary. Upon opening the abdomen we found the lower intestine completely empty. If he had an obstruction we concluded it must be very high in the abdomen, because the intestine below was practically collapsed. In the mesentery there were three or four suspicious looking places. In the lower pelvis there was a small amount of bloody serum. The gall bladder was about 1 cm. in diameter, 2.5 cm. in length, and contained a number of small calculi. The fundus of the gall bladder was at a depth of at least 7 cm. from the margin of the liver, perfectly free, but greatly thickened. The pancreas was enormous, the head much larger than my doubled fist, the enlargement extending backward beyond the midline. In the upper abdomen he had a number of areas of fat necrosis in the gastrohepatic omentum; also further downward on the posterior wall we could see areas of fat necrosis. I made a fatal prognosis at the time. Drainage was instituted, but the man died very promptly.

It may be of interest to note that this man had never consulted a physician, and in his recent attack of pancreatitis he had no shock. The disease developed gradually, he remained comfortable although he had some nausea and vomiting, the vomitus being the contents of the duodenum. This was evidently due to the intense toxemia which paralyzed the intestine. He died very quickly. His gall bladder was of that type we could not bring it to the surface, the only thing we could do was to drain it.

The other man Dr. L. W. Frank mentioned who died following operation,—and I have seen but few of them recover,—was in profound shock, he had no localized pain, no beginning acute peritonitis, no localized rigidity, but a tremendous amount of pain in the upper abdomen, which led us to believe at the time that he probably had perforation of the duodenum or stomach. In the cases I have seen the onset has not been so acute as a rule as in this instance, but I know of nothing in which the shock is so profound, in which the vomitus contains such grumous bloody-looking fluid, and in which the material from the duodenum is ejected so quickly, and generally there can absolutely be no mistake in the diagnosis.

The patient mentioned by Dr. Bruce had been treated two or three days before I saw him and made the diagnosis of acute pancreatitis. He was operated upon within two or three hours,

and if I remember correctly no gall stones were found. At the time of the operation I said these cases were almost always secondary to gall bladder disease, but they sometimes developed after trauma. The work of Opie shows that quite a number of traumatic cases have been reported. Three or four days before symptoms appeared this man had been in a railroad accident and was struck on the abdomen. Later when this man was brought to my attention I remarked that trauma might possibly be the cause, having in mind then the work of Opie. I have seen another case in which a man fell and struck his abdomen, and promptly developed pancreatitis. Quite a number of other cases have been recorded in which pancreatitis developed without pre-existing history of gall bladder disease, all of them being traumatic in origin. They are very interesting types of cases. Pancreatitis may arise from direct trauma; it may arise from any cause that will produce hemorrhage into the pancreas, provided it be of such character that it will liberate some of the digestive ferments of the pancreas, and when these are absorbed into the circulation the patient develops fat necrosis. However, the majority of the cases are due to gall stones. Rupture of small ducts and hemorrhage takes place, although the hemorrhage may be exceedingly small. This is due to retro-injection of bile. I have seen cases where the hemorrhage in the pancreas was punctate in character and yet when the material gets into the circulation it breaks up the glycerine and fatty acids and at various points are seen fat necrosis. Every patient that I have personally seen with extensive fat necrosis has died.

I operated upon a man from Indiana several years ago who lived three or four weeks. The diagnosis of acute pancreatitis was made and the operation confirmed it. He developed marked extensive ulceration due to digestion of the skin and many other symptoms before he died. I recall having been associated with Dr. B. F. Zimmerman in the case of a man who developed well-marked diabetes and who also had gall stones. Operation had been advised but the patient procrastinated. After several days he had severe cholecystitis, the gall bladder was opened and drained, and the man recovered. One of my early cases was seen with the late Dr. Ap Morgan Vance, the patient being a physician from the interior of Kentucky. He was operated upon, and I think we secured the pancreas at the post-mortem table. He died very promptly. These patients die from absorption of toxins that are produced in the upper abdomen; they die just as do dogs when a ligature is placed around the duodenum.

When we talk about gall stones, exploratory operations, etc., I wish to say that I think today there is little excuse for overlooking dis-

ease of the gall bladder. Every patient complaining of digestive disturbances, whether we suspect gastric ulcer or something else, should be carefully studied by the Graham technique. Before this procedure came into vogue, we can well understand why the gall bladder was occasionally not removed because no gall stones were found present. I recall in one instance having opened the abdomen of a woman and closed it because no gall stones could be found and the bladder appeared normal. However, her symptoms continued, and cholecystography was performed later demonstrating failure of concentration. The gall bladder on removal showed marked pathology. I reported before this society one case in which the patient had practically no gall bladder, simply an enormous dilatation of the common duct. The cholecystograph had shown no concentration. In another similar case failure to get a shadow at operation disclosed cirrhosis of the liver. Disease of the liver must be excluded in the interpretation of the Graham technique. Prior to development of the Graham technique, I think a great many gall bladders were removed that were not diseased. Personally, I do not care what the special symptoms are. I believe removal of the gall bladder is like removal of the appendix, it must be proven to me that disease exists in the organ before its removal is justifiable.

Less than a week ago I saw a young woman whose gall bladder has been drained on several occasions, and she was looked upon as having gall bladder disease. The aspiration method was used and I really believe the gentlemen who had the patient under observation were honest in their opinion that the gall bladder should be removed, but further investigation demonstrated that her disease was situated in the colon. In a great many cases, after the appendix has been removed, it has been found that the site of the disease was in the colon, and the patients were not relieved by the operation. In some cases of gall bladder disease, prior to the Graham technique, the patient did not get relief until cholecystectomy was performed. Practically every one of these specimens (appendices as well as gall bladders) are sent to the pathological laboratory for examination and report. In the majority of cases report is made that the tissue shows marked or moderate round cell or leukocytic reaction, which does not mean disease by any means. There are many cases, of course, if studied by the Graham technique, will show definite disease present. We should check all cases before the gall bladder is removed, and also in all gastric and pyloric ulcer suspects. As an example, Dr. L. W. Frank reported tonight the man dying of acute pancreatitis who ten years ago was supposed to have had duodenal perfor-

ation, yet by x-ray study then nothing was shown in the duodenum nor gall bladder. He had pylorospasm, spasticity about the stomach and around the pylorus. He was given belladonna in large doses and apparently relieved. Had the Graham technique been in use then, we could have told him what was the matter. All these ten years the man had a gall bladder with potential danger, finally culminating as the reporter has already detailed.

ATRESIA OF THE AUDITORY CANAL: CASE REPORT.*

By WALTER DEAN, M. D., Louisville.

E. B. came to the City Hospital ear dispensary in February 1927 and gave the following history: He is sixty-eight years old. The hearing in the right ear is impaired. The hearing in the left ear has been practically nil since an automobile ran over him in Detroit and severed his external ear which hung by a pedicle of skin at the top. He was removed to the hospital where the ear was sutured on. No attempt was made, he said, to maintain the integrity of the canal and when we saw him he had a complete traumatic atresia of the canal. The cartilaginous canal had been bisected and the weight of the lobule had drawn the lateral end below the mesial and the canal was entirely obliterated as the photograph shows.

Under narcosis, mastoid incision was made close to the ear, the aponeurosis was reflected and the mastoid was chiseled away down to about the level of the antrum, lowering the posterior bony meatus for a distance of about three-fourths of an inch. Then the posterior membranous canal was incised longitudinally, the atresia opened, and the flaps disposed of by the Pansy method as in a radical mastoidectomy. A half inch rubber tube was inserted in the enlarged meatus and the mastoid incision closed by sutures. As we were in and over cartilage, we feared that infection might supervene and nullify our efforts, but it did not. We conserved all skin so that very little granulation repair was necessary. The canal is now patent and the function of the ear is restored. We believe that, since ten weeks have elapsed since the operation, the improvement to be permanent.

*Read before the Jefferson County Medical Society.

DYSMENORRHEA.*

By LATTIE GRAVES, M. D., Scottsville.

In discussing dysmenorrhea I shall discuss primary or essential dysmenorrhea and not secondary or acquired type.

This so-called minor gynecological condition has great importance because of its frequent occurrence and its economic influence.

Some of our best authorities estimate as high as 75% of our American girls suffer from dysmenorrhea.

The percentage being higher in those who lead a sedentary life. The girls that have the advantage of outdoor life and exercise run a considerably lower percentage.

Be the percentage what it may, there is scarcely a school, office, store or factory that is not interfered with on account of young women being either reduced in efficiency or entirely incapacitated once a month from this ailment.

As yet the etiology of dysmenorrhea is unknown, there being several theories advanced, and none so strong but that a comparison with other theories and a knowledge gained by experience with clinical material makes us believe that the cause is yet to be found.

The older writers regarded the cause of dysmenorrhea as due entirely to mechanical obstruction, caused by a congenital stenosis of the internal os, damming back the menstrual flow in the uterine cavity where it became clotted and acting as a foreign body setting up contractions of the uterus, the cramp-like pains being caused by the passage of the clotted blood as it is forced through the internal os.

This theory has been considerably shaken by numerous observation showing on the one hand, that dysmenorrhea may occur in the entire absence of any mechanical obstruction, while on the other hand, it may be absent when a greater or lesser degree of obstruction is present. Menstrual pains, for instance, are frequently present when the uterine canal is widely patulous. It has been shown that in cases of dysmenorrhea, supposedly due to cervical obstruction, a uterine sound may be easily passed through the cervical canal during the menstrual period, showing that there can be no great obstacle to the free out-flow of blood from the uterus.

The average amount of blood given off at each menstrual period is two to eight ounces, or assuming that the menstrual flow lasts four days not more than two ounces per day would pass. This is equivalent to saying that about forty drops come through the cervical canal each hour, or two-thirds of a drop each minute. It would seem difficult to con-

ceive that the cervix in these cases of dysmenorrhea could be obstructed to such a degree as not to allow the passage of this small amount of blood.

Perhaps the principal argument in favor of the view that mechanical obstruction may, at least in some cases, be responsible for dysmenorrhea, is the fact that a certain number of cases of the primary form are relieved by dilatation of the uterus. On the other hand an even larger number are not relieved at all or are improved only temporarily.

Another theory is that the swelling of the endometrium, whether it be the pre-menstrual edema or a pathologic hypertrophy of the endometrium which was supposed to increase the narrowing of the internal os, causing the pain.

Gebhard describes an endometritis dysmenorrheica in which the mucosa is greatly thickened at the time of menstruation, and filled with fine particles of clotted exudate. He thinks this exudate exerts a pressure on the uterine nerves which gives the dysmenorrheic pains.

Theilhaber denies that the misplacement of the uterus or stenosis of the internal os or hypertrophy of the endometrium have anything to do with dysmenorrhea as etiologic factors, but believes the cause to be a spastic contraction of the circular muscular fibers around the internal os, called forth by a predisposition to abnormal nervous irritability.

Menge and Kronig believe most dysmenorrheas are psychoneuroses.

Flies and Schaeffer elaborated a theory of so-called nasal dysmenorrhea. No satisfactory explanation has been presented for the evident relationship existing between the olfactory nerves and the sexual apparatus.

In view, however, of the great advances which recent years have brought in our knowledge of the internal secretions, and knowing as we now do that these internal secretions or hormones are capable of exerting a selective action upon organs or tissues far removed from those which produce the hormones, it seems much more logical to me to believe the cause of dysmenorrhea will be found in the dysfunctioning of some of the glands of internal secretions.

With this array of conflicting theories the problem of etiology seem far from a solution.

Leaving theories aside there are certain facts which occur with sufficient constancy as to give us some basis for working out a method of treatment.

We find the following anatomic changes occurring with sufficient regularity as to assign a definite relationship between them and the menstrual pains: (1) Malpositions of uterus nearly always present, usually retroces-

*Read before the Third District Medical Society

sion with anteflexion, occasionally retroflexion. (2) Moderate hypoplasia manifesting itself in an infantile cervix of various degrees. (3) Occasionally a cicatricial band at the internal os.

Treatment of dysmenorrhea is difficult and unsatisfactory. All methods used are sometimes successful but quite frequently fail.

We would consider the treatment of dysmenorrhea under two heads: (1) Symptomatic treatment, during the attack. (2) Treatment for permanent relief.

Treatment during an attack: Patient should be put to bed; usually they take to bed of their own accord. Hot water bag to lower abdomen; the bowels should be well evacuated. The drugs used in the treatment of dysmenorrhea are legion. The two drugs, however, which are most efficacious in relieving the pains of dysmenorrhea, both possess such disadvantages that they should rarely, if ever, be employed.

I have reference to morphine and alcohol; the administration of either is attended with the risk of habituation to their use, especially when they are used in the treatment of such a regularly recurring trouble as dysmenorrhea so frequently is.

Atropine is at present receiving much attention. The dose should be large enough to get the physiological effect. This drug has its best effect in that type of dysmenorrhea which suggests the obstructive type or classed by some vagotonic type, the pain in this coming on before menstruation and lasting a few hours after its appearance.

Benzyl benzoate in this class acts well and is less toxic.

In the ovarian type, in which there is hyperactivity of the ovarian secretions characterized by symptoms of bilateral ovarian pains synchronous with the appearance of the flow, pre-menstrual headache, epistaxis and uterine cramps after the flow has begun, adrenalin hypodermically acts beautifully. Recently we have had placed on the market a synthetic drug, ephedrine, which can be administered orally and the effects are the same as adrenalin but more lasting.

Cocainizing the genital spots in the nose gives good results in this type.

In cases where cocainization of these genital spots in the nose gives immediate temporary relief from pain, it is highly probable that we could expect a good percentage of cures from this type by destroying these nerve endings with a galvanocautery or trichloroacetic acid.

In the obstructive type relieved by atropine or benzyl benzoate we may expect permanent relief in a great number of cases by marriage, even when pregnancy does not

take place. It is a common observation that marriage brings great relief from this symptom, probably because the relation of married life acts as a stimulant to the development of the uterus and some of the ductless glands.

Unfortunately marriage cannot be prescribed with as much readiness as medicine. At any rate the suffering and inconvenience of patients is so great that measures looking for radical relief must be considered.

Dilatation of cervix is the most popular method of treating dysmenorrhea of this type, now under discussion.

This plan of treatment is of course based primarily upon the conception that we are dealing with dysmenorrhea of obstructive origin. As I have already shown there can be little doubt of the fallacy of this theory. On the other hand there can be no question that dilatation of the cervical canal is often followed by relief from dysmenorrhea, sometimes permanent, more often temporary.

There are a number of plastic operations on the cervix for relief but none of these surgical procedures have I acquainted myself with, therefore, I cannot disapprove or applaud same.

SOME OF THE MORE COMMON CAUSES OF LOSS OF VISION IN THE LIGHT OF THEIR PREVENTION.*

By T. H. SINGLETON, Bowling Green.

When asked to read a paper before this society, I thought of the number of patients who come to my office with poor vision in one or both eyes, a large percent of which loss might have been prevented, if the proper treatment at the proper time had been secured.

I have nothing new to present in this paper, but thought that a review of this subject might be of interest to us and of some profit to our patients.

The preservation of vision, in my opinion, is next in importance to the preservation of life; to emphasize this fact let us draw on our imagination as to what the end results would be if the entire human family should become blind.

It is a deplorable condition, of which to think, the number of persons who are blind, but it is not so much the object of this paper to speak of the blind, as of the much greater number of people who have partial loss of vision in one or both eyes, who by reason of such loss are barred from filling positions of profit and trust, to say nothing of the many inconveniences from which they suffer.

Vision, or visual acuity, is dependent on

*Read before the Third District Medical Society.

three factors: First, the transparency of the refractive media, namely, cornea, aqueous humor, lens, and vitreous; Second, the perfection of the refractive optical adjustment, the refraction of the eye; Third, the sensitivity of the retina and the optic nerve. Whatever interferes with the proper function of any part of this mechanism results in loss of vision. This interference may be caused, first, by injuries or traumatism; second, disease or toxins; third, anomalies of refraction and accommodation.

INJURIES.

Nature has made wonderful provision for the protection of the eye by encasing it in a very dense and tough membrane, lodging it in a fatty cushion and surrounding it on all sides, except the front, by the bony orbit, and on the front furnishes a curtain, the lids, that close instantly and involuntarily on the approach of danger, and yet it is subjected to many and various kinds of injuries.

In this locality we have fewer cases of loss of vision from injuries, than from diseases or anomalies of refraction. But in mining districts, industrial centers, among workers in metals, stone, and factories of certain kinds, there are more cases of loss of vision from injuries than from all other causes combined.

Non-penetrating wounds of the eyeball are necessarily confined to the conjunctiva, cornea and sclera. Contusions of the eye and the adjoining parts are associated with changes varying in location, and ranging from trifling ecchymosis to the destructive injuries caused by rupture of the eyeball.

Perforating injuries are to be regarded as intrinsically serious, because there is a possibility of a coincident infection of the interior of the eye, which always leads to a severe form of inflammation that is very destructive.

Injuries to the cornea. The most frequent injuries of the cornea are from foreign bodies, erosions, contusions, caustic agents and burns. All foreign bodies lodged in the cornea should be removed early and with as little destruction to the corneal tissue as possible, under strictly aseptic conditions; and all abrasions, contusions, and burns should be treated with the object in view of preserving as much corneal tissue as possible and of preventing an ulcer which will result in either an opacity, or a perforation of the cornea.

Injuries of the iris and ciliary body followed by infection usually result in loss of vision not only to the injured eye but to the uninjured eye through a sympathetic inflammation known as sympathetic ophthalmia. It is not definitely understood how this infection is transmitted from one eye to the other, but it does occur at various periods from two weeks to any number of years, the greatest

number occurring about the sixth or eighth week. So in all cases of infection of this kind the injured eye should be enucleated not later than two or three weeks from the beginning of the infection.

All foreign bodies perforating and remaining in the eye should be removed as early as possible following an injury, unless it be a foreign body lodged in the lens in which event it may remain, as a traumatic cataract will be formed, which will require the removal of the lens. Foreign bodies in the eye, that can not be removed, as a rule are not tolerated for any length of time without setting up an inflammation, the body itself either remaining free or becoming encapsulated in an organized exudate. In the great majority of cases the inflammation is either a panophthalmitis, an abscess of the vitreous, or a plastic irido-cyclitis, either condition requiring the removal of the eye. Blows on the eye often result in dislocation of the lens, hemorrhage into the vitreous, detachment or rupture of the retina, or rupture of the eyeball, all of which result in loss of vision or entire loss of the eye.

DISEASE.

There are few diseases of the eye that will result in the death of the patient, so the physician's chief aim in the treatment of the eyes is the preservation of vision. Some of the diseases are primary but more are secondary to some constitutional disorder, focal infection, toxemia, or from some disease adjacent to or of some other part of the eye. I can mention only a few of the more common diseases, the ones that give us the greatest number of cases of defective vision.

TRACHOMA.

This is a disease with which we are all familiar, and I will not take your time to discuss it more than to say that it is in my opinion responsible for more eye trouble than any other one disease. It may be acute in its onset, but invariably runs a chronic course and often results in a distortion of the lids, ulceration of the cornea, pannus, and partial or total loss of vision. At times it becomes edemic in certain localities. Our health boards, both national and state, have done much to eradicate this disease.

It is useless to speak of the care and necessary precautions in detail of each individual case to protect other members of the family and society, but in my opinion in the average home where this disease is found it is impossible to prevent its being conveyed to others, and in view of this fact, and that each case requires almost daily treatment, I take the position that every patient with this disease, if possible, should be treated in a hospital or institution for this purpose.

ULCERS OF THE CORNEA.

Ulcers of the cornea are among the most frequent affections of the eye, and special significance attaches to them because the opacity they leave often impairs the sight. The prognosis for vision depends upon the location, the extent, and density of the opacity which the ulcer has left behind it. Small opacities, even when dense, are generally less injurious to vision than those which are less dense but extensive. The perforating ulcer may result in total loss of vision, by reason of the complications that may follow, such as a prolapsed iris, luxation of the lens, intra-ocular hemorrhage, irido-cyclitis or even panophthalmitis.

As to the prevention of ulcers, many are and can be prevented by yearly treatment of all injuries to the anterior of the eye, all diseases of the lids, conjunctiva and cornea, proper care and attention of the eye in all acute infectious diseases, the removal of all focal infections of the mouth, nose and throat, and the persistent treatment of all constitutional disorders that predispose to this disease. After an ulcer develops there is no disease that requires more careful attention and good judgment on the part of the physician for the preservation of the vision, than in the successful treatment of this disease.

IRITIS OR IRIDO-CYCLITIS.

This disease may depend upon constitutional disorders, infections, toxins, and traumatism or upon diseases in other portions of the eye; so it may be either primary or secondary, and whether primary or secondary, is due in the great majority of cases to micro-organism or their toxins even though often, we can not tell which one is acting.

While many cases of iritis are due to constitutional diseases, as syphilis, gout, diabetes, etc., I believe a large percent is due to focal infections of the mouth, nose, throat, and other parts of the body. In diseases of the anterior of the eye, as severe infection of the lids, conjunctiva and cornea, the use of atropine will often prevent an iritis. Its use should be begun early in the treatment of all cases of this disease, exercising care in its use in the aged.

DISEASES OF THE LENS AND FUNDUS.

Opacity of the lens, choroiditis, retinitis, papillitis and tumors, benign and malignant, are responsible for a large percent of defective vision and blindness. In all cases of syphilis, diabetes, tuberculosis, nephritis, albuminuria, etc., the vision of our patients should be frequently tested and the fundus examined by the ophthalmoscope whenever we have the least suspicion of eye complications.

ANOMALIES OF REFRACTION AND ACCOMMODATION.

Errors of refraction and accommodation are many but I will refer to only a few, and I would like to emphasize the importance of their early recognition and correction, as the earlier these conditions are corrected the better results we will obtain.

ANISOMETROPIA

This term includes cases in which one eye is very much more hyperopic or myopic than its fellow, or where one eye is astigmatic and the other not, or where myopia exists in one eye and hyperopia in the other, a condition where the vision in one eye is much better than in the other; it may be congenital or may be acquired, but where seen in early childhood it is usually congenital. If this condition is not corrected early the child in many cases will recognize the image in the better eye and ignore the one in the weak eye until from non-use, by the time the child is six or eight years old the vision is permanently impaired and can not then be improved by glasses; whereas in early childhood properly fitted glasses would have equalized the vision in both eyes and both images would have been recognized, and the vision preserved.

STRABISMUS (SQUINT).

Squint is either paretic, paralysis of the muscles; or concomitant, where the squinting eye has the power to follow the movements of the other eye in all directions.

The causes of concomitant squint may be classed as follows: First, disturbance of relation between accommodation and convergence by errors of refraction; Second, inequality in the vision of the two eyes, or amblyopia of one eye, which removes the natural stimulus of diplopia to exact convergence; Third, disturbances of innervation and defective development of the fusion faculty.

Some cases of squint are congenital or at least develop in the first months of life. These cases are in nearly all instances due to congenital weakness or absence of one or more muscles and are classed with the paralytic type. Ordinary convergent squint develops as a rule, from one to four years of age, when the attempt at accurate and long fixation begins, and puts a greater strain on accommodation. Divergent squint does not usually develop in very early life, but later on in childhood or in youth.

In all these cases of squint in children, except the paretic type, the correction of the refraction is a very important element in the treatment and this alone will usually effect a cure if glasses are fitted early enough. Atropine should be used for from three to five days to abolish the convergence spasm, and

to correct the whole of the hyperopia or astigmatism, and make the patient wear the glasses all the time. In children too young to wear glasses the fixing eye may be bandaged or blurred out by atropine at times, so to compel the use of the squinting eye, until such a time as the child can be fitted with glasses.

In conclusion may I say, that every physician should have a Snellen's test type in his office and test of vision should be a part of every physical examination. Every physician should practice palpation of the eye with his finger tips that he may detect any abnormal tension associated with any eye or visual affection.

All children from two years of age up should have a careful test of their vision annually, and all errors of refraction corrected. Every patient with lues, diabetes, tuberculosis, renal disease or albuminuria should have repeatedly, a test of vision and an examination of the fundus of the eye.

I hope to live to see the day when every member of every family from the baby to grand parents, will have annually a thorough physical examination, which includes a test of his vision, hearing, and a careful search for focal infections of the teeth, tonsils and nasal sinuses.

ANGINA PECTORIS: CLASSIFICATION AND SYMPTOMATOLOGY.*

By CUTHBERT THOMPSON, M. D., Louisville.

In discussing angina I believe it is better to consider classification first, as we are dealing with a number of symptoms rather than with a disease having a definite pathology.

When angina was first referred to about two centuries ago, only the very severe cases with agonizing pain and often terminating in sudden death were considered. These were usually associated with definite cardiac lesions.

Forbes, in 1834, first drew attention to a second type which he classified as functional in nature and with a hopeful prognosis. From this arose a nomenclature, *true angina*, and *false or pseudo-angina*, which is absurd and has led to many errors concerning this condition, as one would infer that the true variety was a definite disease with a definite pathology, whereas the contrary is now universally recognized. A simple classification of angina is suggested by Sir James Mackenzie where cases of angina are divided into two groups, the first called *primary angina* in which the anginal pain is due to some essential disease of the cardio-vascular system, and *secondary angina* in which no evidence of

cardio-vascular disease may be found, but where there is some factor outside the cardio-vascular system which has caused a lowering of the threshold of pain or which has depreciated the efficiency of the myocardium. It is not suggested, of course, that there is a definite line of demarcation between these two great classes. One authority (Hay) suggests that the names for these two groups should be *angina major* and *minor*, corresponding to the two groups of epilepsy, and this seems to me to be the simplest nomenclature, as we would then think of a major corresponding to *grand mal* and a minor corresponding to a *petit mal*, either of which may exist independently of the other, or where the minor may gradually merge into the major, or alternate with it.

White draws our special attention to the fact that angina pectoris is always angina pectoris whatever may be the exciting cause, or whatever the other factors in the case may be.

In the larger percentage of cases of angina major there is usually a persistent hyperpiesia with myocardial changes; there may be changes in the walls and lumen of the coronary arteries, with or without thrombosis; or there may be valvular lesions, particularly of the aortic valve associated with aortitis.

The minor type of cases may be divided into toxic neurotic and enemic. As examples of the toxic class we have angina produced by such poisons as tobacco, coffee, tea and the more important variety of poisons produced by microorganisms as in influenza, malaria, diphtheria, typhoid or due to some focal infection as tonsillitis, chronic appendicitis or prostatitis.

The neurotic group is very indefinite, and in these we usually find some cardiac weakness, with either neurasthenia or hysteria, or there may be some reflex agencies which are the cause of the symptoms. The acute attacks in this neurotic class of cases are usually induced by some emotional disturbance.

In the neurotic patients it is probable that the irritated centers in the cord and brain are the underlying causes of the ~~anginal~~ attacks. The renal secretion after an attack is often modified similar to that seen in nervous affections, as after an anginal attack there may be a copious secretion of pale urine. Anemia, primary or secondary may lead to changes in the nerve centers or in the nutrition of the myocardium itself and thus cause angina. One of the cases referred to later comes under this head. When I saw this patient first concerning the retrosternal pain and dyspnea which he complained of after walking half a square, his blood pressure was: diastolic, 60; systolic, 135; pulse, 92;

*Read before the Louisville Medico-Chirurgical Society.

and his blood count: white blood corpuscles, 6,140; red blood corpuscles, 2,835,000; hemoglobin, 60%.

After three months' rest and treatment his diastolic blood pressure was 76, and his systolic 142, his blood count: white blood corpuscles, 6,500; red blood corpuscles, 4,600,000; hemoglobin, 85%.

He kept well for about 3 months but again became anemic and his pain and dyspnea returned. After another long rest his blood again became normal and his attacks stopped.

To judge from the cases of deaths reported in the daily papers one would be led to believe that angina always strikes like a bolt of lightning and is always immediately fatal, still I believe that in most cases either the family physician or the patient has had some knowledge of suspicious pre-existing symptoms. The public do not know that in many cases the prognosis is fairly good and is compatible with many years of usefulness, if the patient will take proper precautions. I have one such patient which I saw in consultation with Osler over twenty years ago, and he is in comparatively good health—following his ordinary professional duties. I have three other patients who have marked major anginal symptoms for over ten years.

Mackenzie reports an average duration of life of 5.4 years after the first appearance of anginal symptoms. The full blown anginal attack cannot fail of recognition, but I believe many of the premonitory symptoms are often overlooked or diagnosed as neuralgia, rheumatism or indigestion.

Osler once remarked that one rarely sees a case of angina in a public hospital. From 1879 to 1894 in the Massachusetts General Hospital there was an average of one case of angina a year, whilst the average for the last five years in this same hospital is about thirty a year. Some think that this increase may be a sequel of influenza.

Sir James Goodhart says angina is common among us if we are on the outlook for the milder forms, and most patients who suffer from major attacks will, when carefully questioned, give a history that for some years previous to the first major attacks they have had minor manifestations anginal in nature.

SYMPTOMS.

On account of the varying pathology causing the symptom complex called angina, the early symptoms are variable but the following sequence has often been observed. Usually the first symptom noticed by the patient is an indefinite sense of discomfort about the chest, with no definite localization or characteristic. Sometimes there is the feeling of heat and cold in the precordial region, followed later by a sense of oppression and tight-

ness in the chest, and still later acute retro-sternal pain, agonizing in intensity. The pulse during an attack may be high or low, depending on the condition of the myocardium and the presence or absence of arteriosclerosis, or the blood pressure may be high at the beginning of an attack and suddenly decline, a very significant symptom showing a failing myocardium. In most of the cases the patient refers to the pain as if it existed behind the middle line of the sternum which may extend from the top to the lower end of the sternum. Occasionally the pain is at the lower end of the sternum in the epigastric region, with flatulence, distension and nausea, simulating indigestion, or acute abdominal disease, and often causing errors in diagnosis. Patients with this symptom are convinced they are suffering from indigestion. These patients usually develop the habit of air swallowing and when a sufficient quantity of air has been swallowed and the gas has been "belched up" there is temporary relief. This sequence of events confirms the patient, and oftentimes the doctor, that flatulence is the correct interpretation of the symptoms.

Moreover, these attacks are often brought on by exercise after meals, as a game of golf after a hastily eaten lunch. The type of this pain is neither intermittent nor stabbing but is continuous and persistent with temporary ebb and flow in intensity, not varying with heart-beats and no throbbing quality about it. It increases in intensity if the effort which produced it is continued, and tends to cease if the patient rests.

The anginal attacks have no periodicity but are paroxysmal, and between the attacks the patient may feel fairly well.

Usually the next symptom observed is dyspnea. This usually appears after the pain has continued for some time, later the dyspnea may either take the place of the pain altogether or in other cases precede the pain.

In the major attacks not only is there agonizing retro-sternal pain and dyspnea but there may be pain in the arms, shoulders, face and eyes (usually more pronounced on the left side), in the suprasternal notch and between the scapulae or in the anterior fold of the left axilla.

The predominance of the pain in the left side is usually associated with cases in which the left side of the heart is most involved. The sensation of faintness is often present. It may be only a feeling of sinking, or may be very marked, amounting to consciousness of impending death, three of which cases I have seen, all of which died within a few hours.

Mackenzie explains these two symptoms, pain and dyspnea, in the following way:—

"When a healthy person runs until his heart becomes exhausted, he is compelled to desist by breathlessness, or a sensation of oppression across the chest, sometimes accompanied by pain. Pain can arise from the action of any muscle in health, when that muscle is made to contract to an excessive degree, or is forced to continue working after fatigue is produced. When pain arises in a muscle affected by disease, the symptom is produced in the same manner as in health, only the exhaustion of which it is the evidence, is more readily induced and the pain therefore appears with greater facility."

I have recently seen three cases in which intermittent claudication preceded any other symptoms. Anginal symptoms occurred more than a year later. In two of these the arcus senilis was very noticeable, specially in one of these patients who was under 50 years.

The usual exciting factors of acute anginal attacks are effort, physical or mental, exposure to cold, or mental excitement.

In an examination of patients suffering from retro-sternal pain which followed exercise and was relieved by rest, especially in those past middle life, we should always keep the minor attacks of angina in our memory and should not be too ready to assure the patient that there is nothing wrong with the heart. We all know of patients, who have been assured by eminent authorities that there was no heart disease, succumbing to this awful condition inside a few months.

Anginal major occurs in men ten times more frequently than in women, whilst the minor types occur five times more frequently in women.

Major angina ends in sudden death in about fifty per cent of cases, in some of which post mortem examination shows no cardiac change, in others degeneration of the myocardium is found with or without disease of the coronary arteries. In a small percentage of cases there is thrombosis of the coronary arteries. These clots may be the immediate cause of sudden deaths. Three of the cases of sudden death which I report were, I believe, caused by blocking of the coronary arteries. In these the pain was excruciating and was not relieved by morphine, the patient was in extreme shock, blood pressure was very low, one patient was very restless, the others immobile, and in all the feeling of impending death, extreme dyspnea and in one case extreme odema of the lungs.

In coming to a conclusion as to the prognosis the following data are to be considered: the sex, age of the patient and age when the symptoms were first noticed, occupation, hypertension, arteriosclerosis, history of syphilis, enlargement of the heart, character of the

heart sounds, frequency of the attacks, severity and location of the pain, the inversion of the T Wave in the electro-cardiogram, the degree of nervous sensibility, the response to treatment, and the frequency and cause of the recurrence of the attacks.

White states that "the prognosis is good in a patient with angina who has a sensitive nervous system where the symptoms followed unusual provocation—mental or physical—provided he shows no evident cardiac pathology, where the pain recurs only after pronounced activity and never while at rest and where he can receive adequate treatment which in the main consists of rest and relaxation, and which shows reasonable response to treatment."

Mackenzie states "if the patient can walk several miles in comfort at any time then there is evidence that there is still a good deal of healthy functioning heart muscle."

No type of cases needs a more thorough investigation than these, as in any of them an acute attack may end life suddenly, while with proper care and the co-operation of an intelligent patient a long and useful life is possible.

Mackenzie says "the estimation of the gravity of any given case cannot be based upon the degree of suffering, for a severe attack of pain is not necessarily dangerous, nor are the mildest attacks free from a dangerous significance. The importance of the symptoms must be estimated by an examination of the conditions that have provoked the exhaustion of the heart muscle."

The prognosis is most serious where the attacks occur with marked evidence of general arterial and cardiac degeneration; where there is little response to treatment and where the attacks are induced with very slight provocation. These patients should be warned of their danger and months of complete rest and care for the remainder of their lives should be insisted on.

I have referred to cases of angina being diagnosed as indigestion. This is an easy error to make in early minor cases, as many of the symptoms simulate indigestion. The following history is suggestive: A middle-aged patient immediately after a meal takes some moderate exercise and begins to have pain behind the lower end of the sternum, gets dyspnea, flatulence and often nausea, he must rest a few minutes, during which time he becomes normal, usually after belching some gas. We should carefully examine such a person, looking for other symptoms of angina. This is the type of case which may later have an acute attack of angina, with immediate fatal results.

The minor attacks may or may not follow

exercise. Indeed they usually occur when the patient is resting or may awaken from sleep in an attack. The attack usually lasts longer than one of angina major.

I will refer briefly to 18 cases of angina which have been under my care. All of the patients were over 40 years old, 13 men and 5 women. Ten of these have died, 6 of the men died during major attacks, inside 2 years after a diagnosis of angina was made, and 2 of them were never able to leave their homes after the first major attack. One who formerly suffered from angina died from other causes. One woman died during the first attack. This patient had a low blood pressure. The other 8 are still living.

One of these, a man previously referred to, had major attacks over 20 years ago and is still attending to his professional duties, but all of the 8 are living very restricted lives. Most of them know what will bring on an attack of pain in their own cases. In some it is exercise, in others worry, and I have found indigestion to be often associated with attacks, whether as a cause or effect it is impossible to determine. In one case where flatulence was a distressing symptom an attempt to give an enema on two occasions precipitated an acute attack. On another occasion the introduction of a rectal tube gave this same patient great relief.

In three of these cases the question of surgical intervention to relieve focal infections had to be considered, two on account of teeth conditions and one suffering from enlarged prostate and infected urinary bladder.

An operation on any such patient should not be undertaken unless it is urgently demanded, but with a good rest in bed and digitalis before the operation these three patients stood the operation very well and the anginal attacks have stopped.

One case illustrates a point mentioned by Mackenzie concerning the cause of the pain, especially the hyperalgesia of the skin over the shoulder and chest. In angina he believes that there is a hyper-sensitive region of the spinal cord including the last cervical and upper dorsal segments of the cord, and a hyper-sensitive bulbar region corresponding to the vagal support of the heart. These regions of the central nervous system may be hyper-sensitive because of impulses reaching them from the heart or because of disease of other organs, or a similar state may exist in neurasthenia.

This hyper-excitability of regions of the central nervous system explains the anginal syndrome whether the site of the disease is in the heart itself, or in other organs, or in the central nervous system.

Irritability of the spinal centres accounts

for anginal attacks when extra demands are made on the heart muscles; it also accounts for anginal attacks induced by movements of the left arm, and for the spasm of the chest muscle, whilst the hyper-excitability of the nuclei in the floor of the 4th ventricle accounts for the nausea and increased flow of saliva seen in many cases.

One of my patients showed this hypersensitiveness in a marked degree. She had recurrent attacks of angina for some weeks before this became marked. Suddenly she complained of great tenderness of the skin around the clavicle and down the left arm over the deltoid muscle, and the slightest touch over this region, or movement of the left arm brought on an attack of angina.

DISCUSSIONS.

Emmet F. Horine: The concept of angina pectoris is at the present time undergoing quite a change as so ably stated by Dr. Thompson. Some authors even go so far as to ignore angina as a distinct entity. In fact if one examines Nelson's Loose Leaf Medicine, volume four, on heart lesions, he will fail to find angina treated as a separate condition. Cohn, the editor of this volume, who is quite an authority on heart disease, does not consider angina as an entity and merely stresses precordial pain in its relationship to the various heart lesions.

In the past, authors have discussed angina as a separate entity, and, by employing the term true and false angina, have caused confusion. Mackenzie, a few years ago, wrote a book of two hundred pages on angina, reporting one hundred and sixty cases. In that group will be found those with sub-sternal and precordial pain associated with the various types of heart disease. As I recall he includes nineteen cases classified as angina but which at autopsy showed an acute coronary occlusion. However, at the present time the concept of angina as a distinct entity is losing ground, we are coming to the point where we consider it largely a symptom.

One must remember that precordial or even sub-sternal pain may develop in a perfectly healthy individual, provided that individual takes a sufficient amount of strenuous exercise, and particularly if he is inclined to be somewhat exhausted physically. An individual in a weakened condition, who is anemic, may have precordial pain provoked by even moderate exercise and present all the symptoms of angina. This must be admitted. Therefore, we should be quite careful in making a diagnosis of angina pectoris, thus leading the individual to feel that a very serious condition is present.

Were we to very roughly classify cases presenting pain of the type under discussion we would I think find that four groups might be easily distinguished. The first group would be an entirely innocent one, that in which pain

arises after severe exertion. Any of us might have pain following a physical exhaustion. There are many other related causes but time will not permit of their discussion. Let us not make the diagnosis of angina pectoris in this first group.

Another interesting group of cases presenting precordial pain is that which Dr. Thompson mentioned, namely the one associated with intermittent claudication. It has been described as ischemia cordis intermittens, the idea being that there is a temporary constriction of the coronary vessels with resulting pain. Many cases of this type have been described. The pain appears ordinarily without warning or after mild exertion, last for a short time and ceases. Grave prognoses need not necessarily be given in these cases.

A third group is that associated with definite though varied cardiac pathology. Certain degrees of coronary sclerosis may be present or perhaps myocardial changes or there may be aortic changes. While there is no constant pathology, we have a rather definite symptom complex, namely the pain, quite severe in type, coming on ordinarily following exertion, and frequently radiating to the neck, face, and often into the left arm or into both arms. This pain lasts only a very short time. It is ordinarily relieved by standing still or sitting down or perhaps by the taking of some amyl nitrite or nitroglycerin as an emergency remedy. I believe we should consider this third group as evidence of myocardial changes plus myocardial fatigue, and treat it as a type of cardiac failure.

The fourth group, and one to which our attention has recently been called, is the coronary occlusion group. This group is one that needs recognition and it has such a definite symptom complex that we ought to be able to recognize it almost from the history itself. The history is that suddenly, perhaps out of a clear sky, an individual will experience an attack of extremely severe substernal pain. This pain is intense and persistent, lasting only for a few minutes but at times for hours or days. It radiates frequently upward into the left arm or into both arms, and is not relieved by morphine or any other sedatives. This is the so-called status anginosus and deserves especial recognition because when it occurs one must realize that a branch of one of the coronaries is blocked, an infarct is formed and the heart is decidedly crippled.

In coronary occlusion the nitrites should not be used for the reason that as a result of the coronary occlusion the heart muscle is crippled, the blood pressure is markedly lowered and certainly nothing should be given to further reduce the blood pressure.

J. A. Flexner: This is a very interesting top-

ic to me. In his paper Dr. Thompson has presented many important features, not only with reference to the nomenclature and classification, but the general change in attitude of the profession on the question of retro-sternal pain. I am glad Dr. Horine referred to the work of Clifford Allbutt on this subject. I think he has made a more extensive study of retro-sternal pain from a pathological clinical point of view than anybody else, not excepting the work of Mackenzie on angina pectoris. I believe a tremendous amount of angina is due to spasm at the root of the aorta as described by Allbutt. We have learned to recognize coronary thrombosis as an important cause of angina. This was recognized by Osler many years ago. I have seen him try on several occasions to see whether it was possible to introduce a broom straw or something of that kind into the mouth of the coronary artery when death was suspected from angina pectoris. In some cases it was possible, in others it was not.

I wish to call attention to a drug that I think is of tremendous importance in the management of angina. Two or three years ago I had the opportunity of discussing this subject with Lewis of London. It has been my misfortune to see two members of my immediate family die of angina pectoris, so the matter is a very interesting one to me. During the last six months of the life of one of these individuals we began the use of luminal. Before this period the patient had an anginal attack almost daily. She would be aroused from sleep sometimes by an attack, and we would have to give her from one to three injections of morphine to afford relief. Amyl nitrite had previously been used in this case and had completely lost its effect. The attacks were often epileptoid in character. That was the beginning of my use of luminal. We were able to discontinue the administration of morphine altogether. During the last six or seven months, when the blood pressure showed a tendency to rise, some of the iodides would keep her in greater comfort than usually seen in such cases. I have had an opportunity of trying the luminal treatment in several other cases of angina, and its effects have been gratifying.

I am satisfied that angina pectoris is rather common, and irrespective of its pathology the symptomatology is such that the diagnosis can be made without the use of a single instrument. I think the diagnosis can be made accurately from the patient's story. Of course I always like to confirm it by a plate retracing with the electro-cardiograph as the case may be. I am like Mackenzie in that particular, I do not believe it is necessary to resort to any instrument to make the diagnosis of angina pectoris. However, if any doubt exists in the mind of the attendant, he had better give 1-100 or 1-50 grain of nitroglycerine during the attack.

I saw today a lady who was having a great deal of cardiac distress, it would not be fair to call it pain. I gave her 1-50 gr. nitroglycerine in water and sat by her side a few minutes and watched the attack disappear.

I was impressed by some of the things Lewis said to me. I asked him what their experience had been in the large hospital with which he is connected in the therapeutic management of these angina cases. He said they were more interested in relieving the suffering of the patient than in the question of cure; but even if a man lived thirty years after an attack, he might still die of angina.

Digitalis has been mentioned: Theoretically it would seem that digitalis is contraindicated in angina, but I have sometimes given it in small doses over a long period of time, and believe it is a very useful drug in certain cases.

John Edwin Hays: Dr. Thompson deserves much credit for bringing this subject before the society. His classification is sensible and conservative. The term "pseudo" should be consigned to the limbo region as it means nothing. Angina pectoris is not now considered an entity but a symptom-complex. We are unable in many instances to ascertain the real cause of the attacks. They may be due to coronary sclerosis, some lesion in the proximal portion of the aorta, or other disease of the heart. It is my opinion that in many cases angina is due to something in the cardio-vascular system. Abdominal symptoms due to indigestion or violent exercise after a meal are simply contributing factors. I think the real pathology is in the cardio-vascular system.

To understand any disease we must be able to correlate the physical manifestations with the pathological findings, and we cannot do that in all cases of angina pectoris. I have always thought in these attacks of angina, when the first attack proves fatal, that the trouble is probably a coronary thrombus. There may be a gradual obliteration of the coronary artery and the patient may have many attacks and die at any time in one of them. The outstanding feature in all these attacks is pain the location and character of which Dr. Thompson fully described. Decided respiratory distress almost invariably accompanies the attack.

I believe the essayist stated that males were ten times more liable than females. I believe that is absolutely true, but just why it is I am unable to say. I think it has been claimed that the reason angina is more predominant in males is on account of their occupations, they are subjected to much more strain and stress. However, most of the cases I have seen have been in people who did not live a very strenuous outdoor life. I can readily see how sudden, severe exertion, usually just after a full meal, might be a contributing factor, but I think that merely

aggravates the condition which already exists in the cardio-vascular system.

A point which occurred to me while Dr. Thompson was reading his paper is the question of syphilis. I do not recall ever having read or heard of a case of angina in which the cause could be definitely assigned to lues.

Another thing: I have never seen a case of angina in a negro. Is the colored race immune to angina?

While Dr. Thompson's paper did not include treatment, I wish to say that the patients I have seen with angina have been very much inclined to over-indulgence at the table. I think if all patients with angina were placed on a rational and well-balanced diet there would be less frequent attacks. Dietary indiscretion may be the origin of the trouble occurring in the cardio-vascular system.

J. Rowan Morrison: We are certainly very much indebted to Dr. Thompson for bringing the subject of angina pectoris to our attention in the way he has. He has dealt fully with the classification and the symptomatology of angina, discrediting some of the older ideas on the subject, and has also given us the newer ideas and concepts. It is very difficult to determine what actually causes angina or pain in the heart, therefore I think his classification in the proper one. It is not so much a question of pain in the heart but precordial pain. It must be very difficult to determine in many cases such as Dr. Thompson has mentioned exactly what is the cause of the angina. I think his description is extremely interesting, and it is a question that particularly should be discussed in Louisville, because many of the older physicians here have believed that no one ever survived three attacks of angina. I understand that John Hunter who was quite an authority on angina had it for twenty years and finally died in an attack.

Another feature that should be freely discussed is the question of whether the trouble is in the spinal cord, the nervous system, or in the heart itself. We know that in certain cases division of the sympathetic nerve and thus destroying its influence relieves the pain the heart. R. G. Spurling, at the Louisville City Hospital, recently performed such an operation and made a very interesting report of the case.

I wish to emphasize a point that has already been mentioned, and that is the importance of coronary sclerosis or coronary thrombosis in relation to the production of angina as that seems to be the type of angina that kills. In other words, that type or major attack with dyspnea, low blood pressure, intense pain, not relieved by ordinary doses of morphine or nitroglycerine. Under such circumstances our attention should be directed to the circulation in the coronary arteries. I think considerable progress has been made by men who have indicated that we have

some definite symptoms of this type of angina. In many of those cases not relieved by opiates and nitroglycerine, there is a decline in blood pressure and high leucocytosis. When the patient develops leucocytosis and low blood pressure during an attack of angina, we may be able to prevent heart failure by rest and general care of the patient. If we can tide the individual over for a sufficient length of time for collateral circulation to become established we will probably prevent early heart muscle failure. It is along that line that I believe some good can be accomplished.

In regard to digitalis: My concept of angina leads me to say that there is no reason to give digitalis for the anginal attack, but in impending failure of the heart muscle digitalis is indicated.

If the patient shows evidence of rapid decompensation, then digitalis in proper dosage should be given.

Ben Carlos Frazier: I would like to say in connection with what some of the other gentlemen have stated about the rarity of angina pectoris in women, that it seems quite probable in the future we will encounter more cases in females than we have formerly. Women are now engaged in more strenuous occupations than ever before, and this is particularly true since the question of woman's suffrage has assumed prominence and the active lives women have assumed during the last few years.

Cuthbert Thompson (in closing): Several of the gentlemen in the discussion referred to "true" angina. I did not use that term in my paper, as I think the words true and false in connection with angina are misleading. To clarify the classification the terms major and minor have been suggested, and I believe these are preferable. We are accustomed to speak of major (grand mal) and minor (petit mal) attacks in epilepsy, and the latter may merge into the former. The simplest case of angina today may prove one of the most severe tomorrow, the minor merging into the major. Why call the mild attack pseudo-angina today and have to change the diagnosis to true angina tomorrow?

I had under observation for some time a patient with angina minor. He developed severe angina and died in the first major attack. There is only a difference in degree between them. I think the sooner we abandon the terms false and true in connection with angina the better.

We recognize angina as a group of symptoms, a symptom-complex, we do not call it a disease, and when we use the term "true" we imply a pathological entity. To designate the attacks as major and minor, or primary and secondary, would seem preferable, thus eliminating the words true and false.

Dr. Horine referred to precordial pain in gen-

eral: I did not use that term in my paper. The pain of angina is mostly referred to as retro-sternal. Precordial pain may be due to many things other than angina. Retro-sternal pain is practically always associated with angina.

As to intermittent claudication in angina: I have only once seen that referred to in the literature, and yet I have had three cases of this nature myself. One of the patients died and necropsy was performed. The man came to me suffering from intermittent claudication, and upon questioning him it was found he had been having attacks of dyspnea for a week, and of course the diagnosis was easily made. These three cases are mentioned in my paper as intermittent claudication with no anginal pain in the beginning.

I was interested in what Dr. J. A. Flexner said about luminal, and also the points that were made by Dr. Morrison. In certain cases luminal seems to act better than anything else.

I believe it is easy to understand why anginal pain develops in certain individuals after slight exercise, especially where the patient suffers from gastro-intestinal disturbances, etc., because the nervous system is already irritated. In one case Dr. Bloch saw with me, the patient could not even move his arm without causing an attack of angina. Undoubtedly the patient had excessive irritation of the nervous system and slight movement initiated anginal pain.

Dr. J. A. Flexner also said instruments were unnecessary in the diagnosis of angina: It is true that instruments are not necessary in most of the cases, but it is very well to have an electrocardiographic tracing made as it helps to clarify the diagnosis.

Dr. Hays asked about the preponderance of angina in males over females, and then answered his own question. Males are under more strain and stress than females owing to the difference in occupations. If there is any irritation of the nervous system strain will more easily provoke an attack. Even in a healthy individual, as Dr. Horine has said, any undue strain or excessive muscular exercise may initiate anginal pain, especially if there is any irritation of the central nervous system.

15 Hereditary Fragilitas Ossium.—A case of hereditary fragilitas ossium is reported by Rosenblatt, with the family tree extending through four generations and with the progress through one fracture. In this family, brittle bones have not skipped a generation. Practically all members have had this symptom; several have had blue sclera and deafness. Unlike the observations of Key, blue sclera were not dominant; and members not having this condition had fragile bones.

CHANGING CONCEPTS CONCERNING ORAL SEPSIS.*

By EDWARD C. ROSENOW, M. D., Rochester, Minnesota.

It seems to me appropriate to consider on this occasion, the development of the important subject of the changing concepts concerning oral sepsis, the clinical and experimental observations upon which it rests, and the good that has already come from its application, and to estimate the benefit that may confidently be expected to accrue from it in the years to come. Moreover, since your commission has seen fit to present this award to me for efforts of my own in this field that bear so directly on dental problems, I may be pardoned for reviewing briefly results of my own studies, particularly the earlier experiments that led to the conception of the theory of elective localization, and to point out why investigators, aside from those who have worked with me, have, until recently, had difficulty in corroborating the experimental findings.

Nowhere in medical history is the value that comes from combined clinical observation and experimental inquiry better illustrated than in the development of our knowledge of focal infection. Notwithstanding the repeated suggestions made in previous years concerning the etiologic relationship especially between acute localized infection and grave systemic disease, the medical and dental professions as a whole remained indifferent until Billings and his co-workers made their clinical observations and correlated experimental studies on animals, demonstrating the importance of localized infections, even though small and symptomless, as common sources of various systemic disorders. The broader conception of this interrelationship, well expressed by the term "focal infection," may therefore be regarded as having originated in recent years. I count myself fortunate in having been associated with Dr. Billings, to have been able to participate in this earlier work in Chicago and to have had the opportunity to continue my investigations in conjunction with clinicians at the Mayo Clinic in Rochester.

Aside from affording information concerning the pathogenesis of a series of diseases formerly not well understood, the work gave medical science a therapeutic principle of the utmost importance. Numerous reports on the relief of symptoms following the removal of foci of infection soon followed. The scope of this influence may be judged by the volumi-

ous literature on focal infection that has since appeared throughout almost the whole civilized world. The benefits that have already accrued directly or indirectly are almost beyond calculation. It is not surprising that much speculation and opinion, often insufficiently supported by facts, have been indulged in both by clinicians who often have little conception of the real significance of experimental studies and by purely laboratory workers who know so little of the clinical applications of their findings. All of the men who were associated with Billings and who did the experimental work had had both clinical and laboratory training and had intimate knowledge of the condition of the patient under investigation. Both types of study have value, but this could be greatly increased if the studies in this field could be made in collaboration or in closer cooperation. Such combined study is the crying need today, in the further working out of this problem. How much more might be accomplished if the many operators in the dental field, particularly root-canal experts, exodontists and dental surgeons, could correlate their clinical and radiologic findings with results of equally expert bacteriologic and experimental studies in animals than by attempting to evaluate the safety of the various procedures, such as root-canal work, by mere clinical observation, as is now almost universally done. It is a noteworthy fact that the results of my work in this field have been verified almost wholly by men who have had the necessary clinical guidance in the selection of material from patients, or who have had extensive clinical experience as well as a laboratory training.

The inability of certain investigators to corroborate my results would seem to be explainable on the ground of the improper selection of cases and material for study or of insufficient attention to technical details, as pointed out especially by Gay and Haden. The early results in studies on ulcer were corroborated by Hardt and Helmholtz, those on iritis by Irons, Brown and Nadler, and those on cholecystitis by Brown. The elective localizing power of streptococci and colon bacilli from urinary infections has been demonstrated by Helmholtz and Beeler. The results in the study of ulcer and arthritis have been fully corroborated, extended and controlled in my laboratory by Meisser, with streptococci isolated from infected teeth in the study of ulcer of the stomach and arthritis; by Nakamura with streptococci isolated from extirpated tonsils, and by Giordano with streptococci isolated from infected teeth and tonsils after the death of the patient. My methods have been used successfully in a study of the etiology of pyelonephritis and ulcerative cys-

titis by Meisser and Bumpus; by Moenich in a study of the etiology of endocervicitis, in which she demonstrated that this condition is often due to partial-tension streptococci and may be a common cause of arthritis in women, and in a study of the etiology of chronic colitis by Bargen. Price, working independently, has also reported corroborative results. The work on iritis and other disease of the eye, on ulcer of the stomach and on pyelonephritis, as concerns dental foci especially, has been verified and greatly extended independently by Haden. Through strict attention to technical details, he has even succeeded in producing onychia in rabbits with streptococci from foci of infection in patients suffering from multiple onychia, an example of extreme specificity.

Certain investigators contend that all infections are focal in character. It is true that this is often the case in the microscopic sense, yet there is a fundamental difference between an area of infection around the joint, as in chronic arthritis, for example, and infection in the jaw surrounding devitalized or diseased teeth, or the tonsils containing dilated crypts with a narrowed or plugged orifice or an encapsulated abscess, and which, for mechanical reasons, cannot heal or drain.

In the systemic or secondary focus, the number of organisms is usually small; whereas, in the primary foci mentioned, the number is usually large. Again, there are those who say, "Why care about infected pulpless teeth or other foci of infection since the mucous membrane of the upper respiratory tract, and especially of the intestinal tract, harbors millions of organisms?" It is well known that normal mucous membrane are relatively impermeable to micro-organisms. In order to make the analogy more nearly correct, I would venture to suggest that the nerve supply to various segments of the intestines be cut off and that certain parts be wholly or partially ligated. Indeed abundant evidence is already at hand in which systemic disease results from improper functioning of the intestinal tract from various causes, such as reversed peristalsis, kinks and adhesive bands, infected diverticula, and, especially, from an appendix whose orifice or lumen has become narrowed from scar tissue, the result of localized infection, or has become plugged by fecal concretions.

Clinical observations indicated that localized infections in certain structures, such as tonsils, teeth and sinuses, are more likely to be associated with systemic effects than those in other structures, such as the lung, in bronchiectasis, or the urinary tract, in cystitis and pyelitis. This may be due to a difference in the kind, number of invasive power of the bac-

teria in these locations or to peculiarities of the tissues harboring such foci. In general, it may be said that the harm which is prone to come from foci of infection is directly proportional to the lack of drainage to the surface. The more virulent the bacteria, the less they need a gross focus for entrance, and the lower their virulence, the greater the factor of focal infection in the production and maintenance of chronic disease. There is much clinical evidence indicating that foci of infection, as in tonsils, are often directly responsible for rendering attacks of acute infectious diseases more severe than they would otherwise be, and for increasing the incidence of complications, such as in diphtheria and scarlet fever. Foci of infection in the upper respiratory tract, as in the tonsils, may also be of epidemiologic importance, as is indicated by the suddenness with which the diphtheria-carrier state disappears after tonsillectomy. In fact, the question of focal infection in its broader sense is as wide in its scope and as difficult of proper application as is the practice of dentistry, medicine and surgery, combined. It cannot be applied by rule of thumb any more than can the healing art. A focus of infection that for mechanical or any other reason cannot heal or drain, that is teeming with organisms, often in mixed culture, must ever be considered not only as a favorable place for entrance but also as a good place for bacteria to maintain or acquire high and particular invasive powers. Clinical observations support these contentions, and experimental results have gone far to establish them. Thus, control experiments with cultures from the buccal mucous membrane, the surface of the tonsils and throat often proven negative, the animals usually remaining well entirely or relatively free from lesions; whereas, strains from the depth of the focus produced characteristic lesions. Moreover, direct experimental proof of this fact has been obtained in the production of chronic foci by the devitalization and infection of teeth in dogs. Strains from patients with arthritis, nephrolithiasis and ulcer of the stomach, having elective localizing power, often retained this property for many weeks or months in the periapical structures of the teeth so infected; whereas, several aerobic platings sufficed to destroy it completely.

THEORY OF ELECTIVE LOCALIZATION

The best proof of the etiologic relationship of a focus of infection to a given lesion is the production of the lesion in animals with bacteria isolated from the focus in the patient.

Through the use of special cultural methods in which due consideration was given the question of oxygen tension and the injection of animals with the freshly isolated strains,

extremely characteristic localizations were obtained with *Streptococcus viridans* from patients with subacute bacterial endocarditis, and with streptococci isolated from the joints of patients with rheumatic fever before the idea of elective localization occurred to me. The peculiar localizations obtained were considered due to different species of streptococci, rather than to peculiar temporary properties of different strains of the same species. It was not until ulcer of the stomach was produced in animals during my study on the transmutation of pneumococci and streptococci with "laboratory" strains that had attained a certain grade of virulence from successive passage through animals that the theory of elective localization took definite form. The long series of experiments in animals that have been performed since by myself, my pupils and independent workers leaves no doubt that the elective power of the bacteria in foci of infection largely determines the location of the systemic lesion or disease a person with foci of infection is likely to develop.

This statement should not be taken to mean that this always occurs independently by predisposing factors. Exposure, trauma and fatigue of certain structure, improper food and bad sanitation, lack of sunshine, alcoholism and other excesses, undoubtedly lower the threshold of local or general resistance and thus greatly increase the likelihood of elective localization of bacteria and other infective processes. Direct intravenous injection of bacteria that had grown in foci, such as those contained in small amounts of pus from tonsils, has often been followed by localization, with the production of lesions corresponding to those in the patient. Moreover, the specific affinity was sometimes so marked that it was not always necessary to give the injections intravenously.

This observation answers an objection raised regarding large numbers of bacteria injected in routine work. Introduction of the bacteria in suitable dosage into the peritoneal cavity, the trachea, the brain, the stomach or the rectum, or into the nasal cavity by packing the nose with gauze soaked in the culture, was followed by specific localization in certain instances, especially when the more virulent strains were used, thus supporting the clinical observations that systemic disease is not always attributable to a demonstrable focus of infection.

In order to remove all doubt regarding the importance of latent foci of infection as an important factor in the production of disease, Meisner and I produced latent foci by devitalizing and infecting the teeth in dogs, thus closely simulating the conditions often inad-

vertantly induced in persons by dentists. Nephritis, nephrolithiasis, ulcer of the stomach, spasms of the diaphragm and other muscles, and chorea have been produced in this way with culture isolated from patients with these respective diseases, and in each instance the causal relationship of the organism introduced into the teeth to the metastatic lesion has been established by the demonstration of the organism in the lesions and focus and by the elective localizing power of the strains isolated. During the latter experiments, another important fact was noted: The bacteria in the induced latent focus of infection, besides producing the characteristic disease, appeared to exert general deleterious effects. The animals lost weight and became more susceptible to intercurrent infections, although they were kept under conditions identical with those of control animals. In other words, conditions of hygiene and diet that were adequate to maintain weight and health in normal dogs were inadequate for dogs with latent foci of infection. The harm, therefore, from improper food or sanitation may be greatly exaggerated by bacteria harbored in foci of infection; a point not yet sufficiently considered.

In my experiments, still other important facts have been brought to light. Streptococci having the same specific localizing power were demonstrated in more than one focus in the same persons simultaneously, and, in some instances, at intervals, in one or more foci, over a long period. These experimental facts are in harmony with the common clinical observation that persons affected with a particular disease, such as iritis, ulcer or arthritis, are prone to have recurring attacks of the same disease, which often tends to become chronic in character. In the light of these facts, the possibility that the tissues or fluids of the body afford the conditions on which the development of the peculiar localizing power of bacteria depends must be seriously considered. The hereditary tendency observed in some of these diseases also points in this direction, as does the repeatedly made observation that a higher incidence and more marked lesions occur in the character organ or tissues of animals infected with the organisms from foci at the time of acute attacks or during acute exacerbations in chronic affections than during quiescent intervals. Moreover, well-marked differences in the incidence and severity of specific lesions were noted at different seasons of the year, especially in chronic ulcer and arthritis. During the colder months, when exacerbations and an increased incidence of these diseases are so common, the incidence of positive results in animals was appreciably higher than during

the warmer months, when patients were relatively or entirely free from symptoms

The fact that bacteria of the same species localize electively, depending on the degree of virulence or other acquired property, is no more remarkable than the fact that bacteria of different species tend to localize in particular organs or tissues. The loss of virulence of streptococci or other bacteria on artificial cultivation and its increase on passage through animals are well recognized. The change in localizing power likely occurs for the same reason.

The reasons for the elective localization of bacteria are still obscure. No doubt the same principles that determine the localization or pharmacologic action of chemicals and drugs apply here. Indeed, my experiments in ulcer of the stomach and epidemic hiccups strongly support this hypothesis. It was found that strains of the streptococci from patients with ulcer which had elective affinity for the mucous membranes of the stomach and which produced ulcer, on intravenous injections elaborated a poison of toxin within the bacterial cell and in the broth that had specific damaging effects. Injection of the washed dead bacteria and filtrates of actively growing cultures produced hemorrhage and ulcer of the stomach without inciting lesions elsewhere. Even more striking were the results following intracerebral injection of living cultures of the streptococcus from patients with epidemic hiccups, the dead bacteria, and filtrates of freshly isolated cultures. In each instance, spasm of the diaphragm or other muscles was produced. Moreover, filtrates of nasopharyngeal washings and pus from tonsils at the time of attacks sufficed to provoke spasms; whereas, similarly prepared filtrates, after recovery, were without effect. Aside, therefore, from the specific attraction of tropism of certain bacteria, their localization and growth in certain tissues are dependent on the production of toxins or poisons that damage those tissues specifically. The specificity of some of the strains was so marked that intravenous injection in pregnant rabbits was followed by localization and lesions that were similar in fetuses and mother rabbits. The view held by obstetricians that foci of infection predispose to miscarriage or to the ill health of the fetus is supported by clinical and experimental findings. The far-reaching deleterious effects that focal infection may have even in conditions generally thought to be hereditary in origin are well illustrated by the work of Talbot, who says:

"The evidence tends to show that most congenital malformations which are the results of lack of embryonic development are not hereditary defects but acquired in utero;

that defects in development are due to injury to the placenta during the early weeks of pregnancy; that the injury to the placenta is due to maternal hematogenous infection of the blood vessels of the placental site, and that the source of the hematogenous infection is generally to be found in the teeth and tonsils."

PRACTICAL CONSIDERATION

The practical applications of the principles of focal infection and elective localization are fraught with many difficulties. Systemic diseases, once thoroughly established and often associated with anatomic changes that in themselves may continue to give rise to symptoms even though there are no organisms present, may continue after all evident foci are removed. The instances of cure or arrest of progress in systemic diseases by the removal of foci of infection are so numerous that search for and removal of all foci possible is indicated in almost every case of serious systemic disease in which there is good clinical or experimental evidence of focal origin. In a given case the variations in the invasive power of the bacteria, the wide differences in natural or acquired resistance to microbe invasion in different persons and at different times, the age and sex, the history of previous attacks, the duration and character of the disease from which relief is sought, and hereditary tendencies must all be considered in determining when, or whether, all or certain foci should be removed, or whether the condition is indeed of focal origin.

To arrive at a correct diagnosis and to manage focal infection properly often requires the advice of specialists in the various branches of the healing art, as well as that of a competent bacteriologist. The opportunities of the dental profession have been greatly increased through a better understanding of the problem of focal infection in general, and especially of the dental area. Many problems are still unsolved, but enough have been solved to prove that prevention and elimination of oral sepsis should henceforth take precedence over preservation of the teeth, which has been practiced in the past almost wholly for mechanical or cosmetic purposes. Preventive measures should begin in childhood, with a view to obtaining proper development of the teeth and oral cavity. The principles underlying various procedures for the prevention and cure of infections of the gums and enveloping membranes of the roots of teeth are fairly well understood and effectively applied by many.

Infections of the dental pulp, pulpless teeth and apical abscesses are theoretically the most dangerous of the various forms of dental foci. They are usually free from symptoms and

hence unsuspected. They are situated in osseous tissues which allow no expansion. They can drain only into the circulation and are exposed to pressure transmitted by the teeth during mastication. They remain active for years, and the bacteria are not encapsulated, as is usually assumed, but are found in areas of active inflammatory reaction where the formation of new blood vessels affords drainage into the circulation.

The bacteriologic study and the animal experiments carried out by me, by Meisser and others working with me, by Price, and especially by Haden, prove that vital teeth free from caries are usually sterile but that practically all pulpless teeth removed from patients are infected, and that, with the organisms, usually streptococci, isolated, the disease causing the patient suffering may often be reproduced in animals. The infection is present whether or not the teeth show rarefaction in the radiogram. Moreover, it does not seem to make much difference whether the root canal had been "properly" filled or not. The idea of focal infection has often been wrongfully condemned because one or more pulpless teeth that showed rarefaction had been removed from a patient without benefit when teeth that showed no rarefaction were thought to be sterile and were left untouched, or when foci elsewhere were not even considered. Again, simple extraction of infected teeth is usually, but not always, sufficient to eliminate infection in the jaw. This seems peculiarly true if teeth have been rendered pulpless artificially. In the individual case, that method of removing infected teeth should be chosen which assures elimination of the infection, which is least destructive and which is associated with the lowest incidence of constitutional reactions manifested by fever and exacerbation of the systemic condition. Exacerbation following extraction of teeth should be regarded as experimental proof that the infection around the teeth removed has causal relationship and that in all likelihood not all of the infected tissue was eradicated during the operation.

A tooth from which the pulp has been removed or which has died from infection seems to have a lowered resistance to bacterial invasion. The methods generally used in root canal work are certainly not adequate to prevent subsequent infection. The wholesale devitalization of teeth and the filling of root canals, often for trivial reasons, as practiced in the past, should, in the light of our present knowledge, be regarded as veritable experiments on human beings. It is to be hoped that an efficient method may be found that will not only sterilize pulpless teeth and periapical tissues that have become infected, but

will also prevent subsequent infection, especially of the periapical tissues. The fulfillment of the latter requirement seems almost unattainable. Until this has been accomplished, it would seem wiser to remove teeth that have become infected or that require extirpation of the pulp than to retain them and have them become a source of infection later. No one deplores more than I the ruthless extraction of teeth that has been practiced in some instances as a result of the work on focal infection. Vital teeth free from pyorrhea should never be extracted except as it becomes necessary for restorative work. The extraction of pulpless teeth seems to me to be indicated, regardless of the appearance of the radiograms, in cases of serious systemic disease for which no other focus can be found. Good effects are especially prone to follow in cases in which it is possible to reproduce the disease in animals with the bacteria isolated. The results from the use of vaccines prepared from the strain proved to be guilty are also often strikingly favorable. Since the diseases that are commonly the result of focal infection are usually due to streptococci, immunity to which is of short duration, not too much should be expected from the use of specific vaccines or serums. They cannot take the place of removal of a cause, the focus.

The removal of foci of infection, particularly if the focus is situated in tissues that may be readily spared, such as tonsils and teeth, should be practiced in certain instances not only as a curative but also as a preventive measure. General deleterious effects, including lowered resistance to intercurrent infection, as well as specific localization, occurred in dogs in which focal infection had been induced artificially in teeth. This may be regarded as furnishing an experimental basis for the improvement in general health so commonly observed, and for the favorable results obtained in the treatment of diseases such as diabetes, syphilis and pulmonary tuberculosis following the elimination of foci of infection.

A careful consideration of all the facts now available indicates that a sane and comprehensive effort toward the prevention of septic foci and their cure, wherever found, will often result in the prevention and cure of chronic disease, in the alleviation of human suffering in a better preservation of the tissues in old age, in a longer average duration of life, and in increased mental and physical efficiency, and will, through the laws of heredity, make for a sturdier race. Since focal infection is so common in the teeth and surrounding structures, the dental profession may confidently be expected to do its full share in preventive and curative medicine of today and of tomorrow.

FOCAL INFECTION.*

By H. K. ORSBORN, M. D., Owensboro.

Focal infection is a localized nidus of pathology in the patient's own body. It is both one of the most recent and one of the most remote conceptions in medicine. It is the lodgment of bacterial colonies in localized areas or organs of the body, where they multiply, incubate, and throw their toxic products into the blood stream, thus producing various acute and chronic diseases.

It has been largely through the efforts of E. C. Rosenow, an eminent pathologist, and later with his disciples and co-workers, Herman C. Bumpus, Jr., and John C. Meisser, that the development of focal pathology has been achieved. Abraham Jacoby and Frank Billings, and many others of equal note have added greatly to this pathology.

These bacteria invade the tissues of the body in such a way as to favor their growth and permit their toxins to injure the tissues. Those most frequently attacked are muscles and nerve tissues in the form of rheumatism and neuritis. The exact manner in which these foci spread their infection to remote parts of the body or produce a general systemic infection is still a matter of discussion. Rosenow has shown that the micro-organisms involved in focal sepsis have an elective affinity for certain tissues and organs, and if from the lesions produced cultures are made and injected into animals, similar lesions in similar organs are reproduced. It is therefore possible, in many cases, to establish a definite relationship between a focus of infection and the disease which is suspected to arise from it.

The tonsils seem to have the most generally recognized portals of entry for systemic infections, and the coincidence between disease of the tonsils and rheumatism, arthritis, etc., led to an investigation of their probable connection and the establishment of the doctrine of focal infection. Jonathan Wright, of New York, in 1906, discussed the way by which the tonsil arrested the entrance of germs into the body and the conditions under which that mechanism broke down. In the same year the celebrated pediatricist, Abraham Jacoby, cited a number of facts in support of toxin absorbing and transmitting power of the tonsils. He also pointed out that the tonsil was not the only pharyngeal route of invasion, but that the lymph apparatus of the pharynx itself played an important part in the process—a view fully sustained by Thomas R. French, in a paper read before the American Laryngological Society in 1920.

It is almost universally accepted that in-

fection often enters through the tonsils and the peritonsillar tissues, and that acute rheumatism, endocarditis and many other forms of streptococcal disease are thus introduced into the system.

The precise anatomical and pathological mechanism by which tonsillar infection takes place is still largely uncertain, but the work of Rosenow, and the later work of the Division of Experimental Bacteriology of the Mayo Foundation, have made it reasonably certain that the micro-organisms involved are certain strains of streptococci, particularly the viridans and the gram negative. It has been amply shown that even in remote infections where the colon bacillus appears to be the predominant bacterial agent, the tonsillar streptococcus is the original cause of the disturbance.

It is a well established fact that even virulent invasions can take place through the tonsillar portals without reactionary inflammatory changes in the tonsillar tissues themselves. A thin layer of epithelium in the interior of the crypts is easily and frequently damaged, affording a ready passage to the lymph channels; therefore it is not uncommon to find very slight tonsillar irritation the forerunner of more or less severe systemic infection. On the other hand the onset of acute rheumatism, endocarditis, etc., is often preceded or accompanied by an attack of acute tonsillitis. Bumpus and Meisser report that: "It is our custom to have tonsillectomy performed in all cases in which the urinary infection may be reasonably believed to be the focal origin. Since we have adopted this procedure a surprisingly large number of apparently negative tonsils has been found to hide deep-seated, virulent infections." Their experience is that of most clinicians and investigators. On superficial examinations the small tonsil appears to be harmless, while the larger one by its size and projection into the throat will often be recommended for removal. This may seem on first impression the proper course to pursue, but Hermon C. Bumpus says that from the viewpoint of focal infection the reverse is probably true. The small tonsil is generally buried deeply in the tissues, and it may be difficult or impossible to demonstrate that it harbors infection, although its buried location makes absorption from its crypts easy. The large tonsil, through its projecting position, has a tendency to drain into the throat, and the exudates and bacteria are swallowed and rendered comparatively harmless.

In two hundred cases of arthritis, reported by Nathan P. Sauffer, in which 66 percent were found to have diseased tonsils, a large number were removed and in cultures made

*Read before the Davies County Medical Society.

from them the following organisms were found: *Streptococcus nonhemolyticus*, *streptococcus hemolyticus*, *streptococcus viridans*, *streptococcus aureus*, *pneumococcus*, *bacillus proteus*.

The tonsils were the earliest and the teeth one of the latest structures to be connected with focal infection, Sir William Hunter, of McGill University in 1910, first called attention of physicians to the subject of oral or dental sepsis. Sir William's treatise influenced profoundly dental thought, and it has been credited with being the prime factor in evolving a modern school of dentists who, by their progress in relieving the cause of some bodily diseases, have earned their right to the title of dental clinicians.

Experimental research and clinical observation leave little doubt that infected teeth do frequently cause systemic disease.

Rosenow did many experiments in which infected teeth were extracted from patients supposedly suffering from focal infection, and by the injection of freshly prepared cultures from these teeth reproduced similar conditions in animals. Haden obtained similar results with cultures from the root tips taken from patients with focal diseases.

S. B. Riggs, D. D. S., says there is no such thing as a harmless mouth infection. He says that infections around the roots and ends of the teeth are in the majority of cases nonsuppurative and their injury to the body is due to toxins rather than to invasion by the germs themselves. He says, too, that the mouth may be the primary cause of disease elsewhere in the body.

Dental infection is the cause of a greater number and variety of disorders than the tonsils, according to all reports. These diseases include arthritis, gastric and duodenal ulcer, myositis, appendicitis, gall-bladder infection, multiple sclerosis, transverse myelitis, nephritis, pyelitis, cystitis, neuritis, and certain diseases of the eye. This may be somewhat of an exaggeration of the number and type of disorders alleged to be due to dental infection, but according to all reports this is, at least, virtually true. Granting this admission it seems certain that there is a fairly long list of diseases, such as arthritis, nephritis, pyelitis, iritis, gastric and duodenal ulcers, gall-bladder infections, and even diseases of the urinary tract.

Many remote and systemic diseases appear directly traceable to an infected gall-bladder, but a question of doubt exists as to the gall-bladder being a primary focus of infection. The consensus of opinion tending to the belief that the infections are derived from dental and oral foci. Certain types of arthritis, arteriosclerosis, brown atrophy of the heart mus-

cle, and others are traceable to infection of this viscus.

The results of careful investigation show scarcely a doubt of the prostate being a frequent and prolific source of systemic infection. Reports of a series of observations made upon two hundred men by Charles Hugh Nilson taken in indiscriminate sequence, who came for conditions which naturally fell within the province of the internist, and not for diagnosis of prostatic troubles. In each case a complete examination of the prostatic fluid was made with the result that 85 had infected prostates and 58 had had gonorrhoea. The symptoms and clinical pictures were vague, but they were classified as follows: 9 lumbar and sacral spondylitis, 15 lumbago or sacroiliac disease, 7 nervousness and rapid heart, 1 iritis.

Duodenal ulcers, rheumatism, neurasthenia, nervousness and loss of weight were some of the other disorders found.

Attention has been called to the rectum as a focus of infection by W. A. Fansler, of the University of Minnesota. He mentions the following types of infection, either alone or in combination, located in the rectum, which gives rise to absorption of toxins: General proctitis, usually associated with colitis, infected hemorrhoids, ulceration of the rectum, cryptitis, sinuses leading from the rectum. The symptoms manifested in systemic conditions arising from these foci are, according to Fansler, the same as those of other infections.

It is generally admitted that the accessory nasal sinuses play a primary part in the causation of diseases from focal infection, but from reports they are not very frequent factors. H. Ross Skillern thinks nasal sinuses are the least common foci of infection. He regards them as an infrequent cause of systemic infection, with the possible exception of the ethmoid and sphenoid cells. He thinks those sinuses which drain most freely are the least likely to give systemic signs of infection, while lack of drainage is more likely to cause symptoms in the joints or elsewhere in the body.

Phillip C. Jeans summarizes this matter by stating that any disorder which may result from a focus of infection may result from a sinus disease.

There is a wide range of opinion concerning gastro-intestinal infections. There are some who attribute almost every possible disease to this source, and there are others who persistently deny that any sickness can be laid to that cause. Between these two extremes there is doubtless the middle ground of truth in the assumption that gastro-intestinal sepsis is the cause of certain symptomatic conditions. However, it must be granted

that even that ground is rather indefinitely defined. The proximity of the genito-urinary organs formerly led to the supposition that such infections had their origin in the lower bowel; but the investigations of Rosenow, Bumpus, and Meisser, would seem to have disposed of this assumption.

It is not tenable to suppose that the bacteria and toxins from a focus of infection are the sole factors in the production of symptomatic disorders classified as focal infections; for then every person who had harbored such a focus would develop a systemic disease, and this we know, is not the case. An important agent is the general condition of the patient himself that creates what is called resistance. H. D. Newkirk, three years ago, stated this proposition with clearness, which I quote, as follows: "Just as individuals vary in size, appearance, and so forth, it is reasonable to suppose that they vary in the matter of resistance to infection. One patient has a ruptured appendix and dies. Another has practically the same condition and makes a good recovery. So, though the whole list of diseases, one patient reacts favorably and another does not. Why is this? Allowing for difference in virulence of the bacteria and duration of the infection, we still have the major factor of resistance to infection or immunity which is of much importance in giving a prognosis, and especially in the matter of focal infection. If we had some way of measuring from time to time the resistance of an individual to a particular focus of infection, we could make a graph showing whether he was approaching the danger line or receding from it, and determine whether a tonsil, even though it contained cryptic material, should be removed in order to prevent the patient from crossing the danger line and developing rheumatism or arthritis."

"Whether this resistance," the author concludes, "should be measured in terms of blood chemistry (bloodurea or sugar tolerance), by lymphocyte counts, or in some other way, we do not know, but it seems of sufficient importance to warrant the most exhaustive studies and experiments."

IN MEMORIAM

DR. GEORGE T. FULLER.

George T. Fuller, Sr., son of Charles and Jane Bernice Lamm Fuller, was born April 9, 1855, in Ballard County, now Carlisle County, Ky., about three miles west of Lowes.

After the death of his mother, January 10, 1867, before he was quite twelve years of age, he attended school from February, 1867, to June of the same year, at "New Retreat," one-half mile east of Lowes.

The following fall and winter he attended

a country school at "Old Zoar," which was about one mile west of his birthplace. Prof. Smith Denton was the teacher. The fall of 1868 he went to the Milburn Academy, boarding at the home of Dr. Canister McKinney through the session of 1868-69. He returned to the school at Milburn in the fall of 1869.

Dr. Fuller received his first medical instruction in the office of Dr. McKinney, Milburn, Ky., in 1869-70-71-72.

After the school closed in June at the Milburn Academy he worked at different jobs the remainder of the year and for the next two vacations, doing anything honorable to secure funds to defray school expenses, from currying horses in a livery stable to working in a telegraph office. In those days there were no scholarships nor avenues through which one could work one's way through college as at the present time.

In 1873 he took the examination in Ballard County for a teacher's certificate, securing a first class; that fall he taught his first school at Pugh School House, two and one-half miles north of Milburn, boarding with John Peebles. After the close of that school, in the latter part of February, 1874, he immediately began another at Shady Grove, two miles east of Blandville, Ky., teaching there three months. The fall and winter of 1874-75 he taught at Sharon, which is about half-way between Milburn and Lowes.

In the summer of 1874 he rented three acres of land from his uncle, Andrew Fuller, and raised a tobacco crop, which he sold, hanging in the barn, for \$205.00 that fall. This was added to the amount he had secured by teaching to attend medical school, so in October, 1875, he entered the Physio-Medical College, corner of Seventh and Cutter Streets, Cincinnati, Ohio, graduating there March 1, 1877, returning to Ballard County.

Immediately after graduation he began practice at Cunningham, Ky. In 1880 he sold his practice to Dr. Robert Mitchell and moved to Blandville, Ky., where he bought one-half interest in a drug store with Tom Terrell, and practiced his profession until the spring of 1881, when his health declined and he sold out and went west, moving from place to place during the year. That fall he attended the Cotton Exposition at Atlanta, going from there to Florida. His health steadily improved from the time he left Blandville until he returned to his old home in Ballard County, December 20, 1881.

In February, 1882, after being strongly petitioned, he moved to Lowes, Graves County, where he practiced his profession for sixteen years.

In January, 1899 he went to Cincinnati, where he took a post-graduate course at the Eclectic Medical College, graduating June 7,

1889, and returned immediately to his home at Lowes.

It is befitting to say here that the interests of this college always lay very near to his heart, and the names of eighteen young men can be recalled, besides his own four sons, who, through his influence, entered and graduated from the Eclectic Medical College.

A peculiar incident in his career is perhaps unequaled, in that he and his four sons—Terrel Lowe, who died in South America; George T., who passed away in Tucson, Arizona; Willie Howe, who recently closed his office in Mayfield, Ky., to study further in New York for a year, and James W. T., the youngest of the four, pursuing post-graduate work in New York—all graduated from the same school of medicine, the Eclectic Medical College of Cincinnati, and were or are all practicing physicians.

At the funeral service of Dr. Fuller, Rev. W. M. Wood, Nashville, Tenn., former pastor of the family, said: "No greater eulogy could be paid any man than that his four sons had chosen the profession of their father, graduating from the same college, and were walking in his footsteps in relieving suffering humanity."

In 1898 Dr. Fuller disposed of his business at Lowes and removed to Mayfield, where he opened up his office on Broadway, April 4, 1898, soon establishing a large and successful practice, being recognized as especially skilled in diagnosis and applying specific medication as indicated. He was genial, courteous, sympathetic and kind, which endeared him to his patients and made him beloved by all, both young and old.

Dr. Fuller, early in his practice, became interested in public health work, and appreciated the necessity for educating the people to employ preventive measures to check disease, such as trachoma, tuberculosis and other communicable troubles. He also took a great interest in the correction of defects of the body and mind where possible.

In March, 1888, he was appointed by Governor W. O. Bradley as a member of the State Board of Health, and served continuously to the time of his death, with the exception of one year under the administration of Governor A. E. Wilson.

Twice he was appointed by Governor Wm. J. Fields to represent Kentucky at the annual Congress of Medical Education, Licensure, Public Health and Hospitals, in Chicago, attending March 9-12, 1925; the second time his ill-health prevented.

August 6, 1926, Dr. Fuller was appointed by Governor Fields as a member of a commission to make a study of the causes of crime in Kentucky.

He was the organizer and first president of the Kentucky Eclectic Medical Association, serving in that office for four consecutive terms. He served as president of the Graves County Medical Society and held many other position of trust and honor.

Dr. Fuller was a man of very conscientious scruples and untiring in any undertaking, and especially so in all matters pertaining to his profession and in the performance of his duties relative to the State Board of Health, of which he was a member for so many years. He would permit no consideration of personal convenience to weigh against his conception of the best interests of the public or his own clientele.

Dr. Fuller was one of the pioneers in western Kentucky. He began the practice of medicine long before the days of automobiles and good roads, and when doctors were not so many as even now, perhaps none nearer than ten miles or more away. He rode on horseback, through the rain, sleet and snow; even though the night were dark and stormy, he wended his way over dangerous roads and swollen streams, oftentimes having to give rein to his horse, for he himself could only see the road when the lightning flashed.

In his early practice in the country he did not have the conveniences, appliances, etc., of a hospital, nor the assistance of trained nurses and ambulances, as we have today.

As typical examples of the early general or family practitioner's resourcefulness, we mention the case of a young man whose skull was crushed by a falling tree and to whom he was called. Without trained medical assistants or nurse, by an old-fashioned grease lamp of colonial days furnishing a meager light, a trephine was made and today the man still lives. Another case was a man who fell from a high loaded wagon of hay, breaking his leg midway between the hip and the knee; again with untrained assistants, using a kitchen table and other necessary things, as sheets, blankets, quilts, pillows and such things as could be gotten in remote country homes, the broken member was set in the woods near the scene of the accident; then, under Dr. Fuller's direction, a litter was made of small saplings, with quilts tacked over them, to carry the wounded man to his home, the litter being borne on the shoulders of four men.

But few physicians of Dr. Fuller's age have had so large and diverse an experience in doing general practice, or wielded so great an influence, both in his profession and elsewhere, or had so large a circle of friends among all classes and ages of those who were touched by his life, either professionally socially or in any other way.

WOMAN'S AUXILIARY NOTES

Hygeia Chairman for McCracken.

Mrs. C. P. Burnet, Paducah, has been appointed Hygeia chairman for McCracken County by Mrs. J. T. Reddick, President of the Woman's Auxiliary, McCracken County Medical Society.

The Woman's Auxiliary, Garrard County Medical Society, was organized March 17, 1927 at Lancaster. The officers elected were:

President—Mrs. J. B. Kinnaird.

Secretary-Treasurer—Mrs. B. B. Montgomery.

The charter members are: Mrs. Ida Mae Amon, Mrs. J. E. Edwards, Mrs. J. B. Kinnaird, Miss Kate Kinnaird, Mrs. V. G. Kinnaird, Mrs. B. B. Montgomery, Mrs. B. C. Rose.

The Woman's Auxiliary, Perry County Medical Society, was organized July 11, 1927 following the Semi-Annual Ladies Night Banquet of the Perry County Medical Society at Hazard. The officers elected were:

President—Mrs. R. L. Collins.

Vice-President—Mrs. J. P. Boggs.

Secretary-Treasurer—Mrs. Dana Snyder.

The charter members are:

Mrs. Z. M. Abshear, Buckhorn, Ky.; Mrs. J. P. Boggs, Hazard, Ky.; Mrs. R. L. Collins, Hazard, Ky.; Mrs. M. E. Combs, Hazard, Ky.; Mrs. Ben Fitzpatrick, Hazard, Ky.; Mrs. J. S. Gilbert, Hazard, Ky.; Mrs. H. W. Gingles, Hardburly, Ky.; Mrs. J. D. Grant, Allock, Ky.; Mrs. A. M. Gross, Hazard, Ky.; Mrs. Hiram Hensley, Napfor, Ky.; Mrs. Jessie Hobbs, Glomawr, Ky.; Mrs. W. B. Hopkins, Anco, Ky.; Mrs. J. M. Ray, Allais, Ky.; Mrs. W. E. Ray, Allais, Ky.; Mrs. S. M. Ritchie, Hazard, Ky.; Mrs. Dana Snyder, Hazard, Ky.; Mrs. S. B. Snyder, Hazard, Ky.; Mrs. B. S. Walden, Lothair, Ky.; Mrs. G. B. Wheeler, Hazard, Ky.

OUR OWN HISTORY

Since the publication of the Woman's Auxiliary Number of the Kentucky Medical Journal a few interesting and valuable reports of the early work of the Auxiliary have become available. These together with current press notices, programs, etc., are carefully kept in a scrap book and filed with our records. We wish to keep our data as complete as possible.

Following is a copy of the report of the first meeting for organization. The names of some of the women present were not obtained as they left the meeting before the Secretary could get in touch with them.

Can you help us to supply the missing names? Were you present? If so will you kindly communicate with Mrs. A. T. McCormack and help her to make this record complete?

FIRST MEETING FOR ORGANIZATION, THE WOMAN'S AUXILIARY, KENTUCKY STATE MEDICAL ASSOCIATION.

Held at Crab Orchard, Ky., September 19, 1923.

Officers Chosen Among Those Present:

President—Mrs. Graham Lawrence, Shelby-

ville, Ky.

Vice-President—Mrs. C. Z. Aud, Louisville, Ky.

Secretary—Dr. Annie S. Veech, Louisville, Ky.

Board of Directors:

First District—Mrs. Frank Boyd, Paducah, McCracken Co.

Third District—Mrs. C. N. Gower, Trenton, Todd Co.

Sixth District—Mrs. P. C. Sanders, Danville, Boyle Co.

Seventh District—Mrs. T. H. Gamblin, Monticello, Wayne Co.

Eighth District—Mrs. J. A. Ryan, Covington, Kenton Co.

Ninth District—Mrs. J. W. Kincaid, Catlettsburg, Boyd Co.; Mrs. W. O. Eaton, Ashland, Boyd Co. (Subs.)

Tenth District—Mrs. T. C. Holloway, Lexington, Fayette Co.

Eleventh District—Mrs. W. M. Martin, Harlan, Harlan Co.

Names of Those Present:

First District—Mrs. Frank Boyd, Paducah, McCracken Co.

Second District—Unable to get names.

Third District—Mrs. B. E. Green, Jr., Elkton, Todd Co.; Mrs. C. N. Gower, Trenton, Todd Co.

Fourth District—Mrs. W. J. Avery, Elizabethtown, Hardin Co.; Mrs. J. Y. Greenwell, New Haven, Nelson Co.; Mrs. H. R. Nusz, Cecilia, Hardin Co.; Mrs. T. H. Poteet, Hodgenville, La rue Co.; Mrs. C. C. Riggs, Upton, Hardin Co.

No District Director selected.

Fifth District—Mrs. Irvin Abell, Louisville, Jefferson Co.; Mrs. C. Z. Aud, Louisville, Jefferson Co.; Mrs. Maurice Bell, Eminence, Henry Co.; Mrs. J. R. Connolly, Louisville, Jefferson Co.; Mrs. Graham Lawrence, Shelbyville, Shelby Co.; Mrs. J. N. McCormack, Louisville, Jefferson Co.; Mrs. J. B. O'Connor, Louisville, Jefferson Co.; Dr. A. S. Veech, Louisville, Jefferson Co.

No District Director selected.

Sixth District—Mrs. C. B. Kobert, Danville, Boyle Co.; Mrs. P. C. Sanders, Danville, Boyle Co.

Seventh District—Mrs. T. H. Gamblin, Monticello, Wayne Co.

Eighth District—Mrs. H. V. Johnson, Georgetown, Scott Co.; Mrs. J. A. Ryan, Covington, Kenton Co.

Ninth District—Mrs. J. W. Kincaid, Catlettsburg, Boyd Co.; Mrs. W. O. Eaton, Ashland, Boyd Co.

Tenth District—Mrs. T. C. Holloway, Lexington, Fayette Co.

Eleventh District—Mrs. G. S. Brock, London, Laurel Co.; Mrs. R. P. Hornsby, McKee, Jackson Co.; Mrs. W. H. Joyner, East Bernstadt, Laurel Co.; Mrs. W. H. Martin, Harlan, Harlan Co.

Annie S. Veech, Secretary.

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COUNTY SOCIETY REPORTS

Harrison: The Harrison County Medical Society held the regular monthly meeting at Harrison Memorial Hospital July 4, 1927. Members present: Drs. Wells, Wood, N. W. Moore, H. C. Clark of Falmouth, Rees McDowell, Martin, W. B. Moore, Wyles, Henry and Blount. Meeting called to order by Dr. Wells. Minutes of last meeting approved as read. Dr. Rees reported a case of Labor Occiput Posterior, after much difficulty position changed to first and delivery completed with forceps. Dr. Martin reported case of Cerebral Hemorrhage Complicated by Auricular Fibrillations. Dr. Wells reported case of Traumatic Hemorrhage in Spinal Cord with recovery. Dr. McDowell reported case of Cardio Renal Disease. Dr. Clark reported case of Nephritis, Blood Pressure, Systolic 280, fluid in pleural cavities and pericardium. Dr. Wood read paper on Psycho-Neurosis. Paper was discussed by Drs. N. W. Moore, Clark, Rees, Martin and Wells.

W. B. Moore, Secretary.

Letcher: Dr. John D. Fitzpatrick, Whitesburg, age 47, a graduate of Medical Department of Kentucky University, 1904, died at his home on August 17, 1927, of cirrhosis of the liver.

Dr. Fitzpatrick was prominent in County and State politics. Served two terms as County Judge of Letcher County. Was elected each time on Democratic ticket in a county where more than 75 per cent of the population is Republican.

Was one of organizers of First National Bank of the City, and was for more than twelve years president of that institution.

He was for several years President of Letcher County Medical Society.

B. C. Bach, Secretary.

Franklin: The regular monthly meeting of the Franklin County Medical Society was held at the Capital Hotel on August 4th.

Members present were: Doctors Budd, Ginn, Darnell, C. T. Coleman, Coblin Stewart and Minish. Dr. C. W. Kavanaugh of the Anderson County Society was our guest.

In the absence of the President and Vice-President Dr. C. T. Coleman presided.

The minutes of the July 7th meeting were read and approved.

Dr. G. A. Budd had charge of the program and read a very interesting and instructive paper on "Prenatal Care of the Infant." This paper was discussed at length by all present and Dr. Budd was highly complimented by all on his expose of the subject.

Dr. R. M. Coblin will furnish the program for the September meeting.

Adjournment for lunch.

Dr. L. T. Minish, Secretary.



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KENTUCKY MEDICAL JOURNAL



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No. 11

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BEING THE JOURNAL OF THE KENTUCKY STATE MEDICAL ASSOCIATION

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EDITORIAL

THE MEMPHIS MEETING

Memphis, the Queen City of the Valley, will be the host to the Southern Medical Association, November 14-17. Ten years ago 'mid the call of the bugle and the tramp of soldiers, the Association held a great war-time meeting in Memphis. The uniform of the Army and Navy Medical Corps was much in evidence, as were uniforms of other countries worn by visitors to the meeting. The setting this time will be different. This will be a great peace-time meeting. But the purpose of both meetings is the same, to make better physicians of those who practice in the South.

GENERAL PROGRAM PLANS.

The plan of the meeting last year was declared so successful that it has been decided to carry it out again this year. Monday there will be clinics by the profession of Memphis and an extensive program is being prepared by the local clinic committee. Tuesday will be given over to two large general sessions in which clinics and papers by distinguished physicians throughout the South will be presented, the program having been arranged by the President. The clinical sessions Monday and Tuesday, as well as many section meetings on Wednesday and Thursday, and the exhibits, will be at the City Auditorium, the finest and most commodious convention auditorium in the South. Monday evening there will be a general session featuring the address of the President, Dr. J. Shelton Horsley, of Richmond, Virginia, together with the address of welcome. Alumni reunions will be held on Tuesday evening, and the orations on medicine and surgery at a general session on Wednesday evening. All sections will meet Wednesday and Thursday, forenoons and afternoons, each section meeting in half-day sessions as in the past several years.

ENTERTAINMENTS.

The President's reception and grand ball, an event that is always enjoyed by many, will be held on Wednesday evening immediately following the general session. Other entertainments are being arranged with something special for the ladies. Memphis has splendid

golf courses for those who wish to play golf and there will be the usual golf tournaments, one for the men and one for the ladies. The gun shoot tournament, held last year for the first time, won such popularity that arrangements are being made for a shoot at Memphis.

HOTELS.

Memphis has some splendid hotels and all may be assured of comfortable accommodations. The Hotel Peabody, one of the best hotels in the whole country, is General Hotel Headquarters. Dr. J. J. Shea, 1018 Madison Avenue, is Chairman of the Hotel Committee, which will see that all are comfortably housed.

MEMPHIS AND THE MEMPHIS PROFESSION.

Memphis is a great city with much of interest for all. It has splendid parks, in one of which will be found the largest collection of wild animals in the South, wonderful drives amid beautiful homes and much to charm the visitor.

It has a progressive medical school and splendid hospitals, and a medical society, the Memphis and Shelby County Medical Society, that is alive to its obligation to make the meeting the best in the history of the Association and to make all who come go home happy.

Dr. George R. Livermore is President of the local Medical Society; Dr. E. C. Ellett is General Chairman for the meeting; and Dr. B. W. Fontaine, Vice-General Chairman; and working under them are active committees.

Every physician in the South who is a member of his local and state society should attend this meeting if he possibly can. The cost of the trip will be an investment and not an expense. The gain in knowledge of all who attend will increase their usefulness and earning power.

THE OWENSBORO SESSION

The Owensboro Session of the Kentucky Medical Association was in many ways one of its most successful meetings. We think we can say without invidious distinction that the Scientific Program was quite as good as any we have ever heard presented at any medical meeting. This was due to the splendid selection of subjects by Dr. John W. Scott of Lexington, who was extended a vote of thanks by the House of Delegates.

Many important subjects were covered in the procedures of the House of Delegates. Our members will find much food for thought in its discussions and reports which will be published verbatim as usual.

The exhibitors had reasonable ground for complaint. The attendance in the exhibit hall was much smaller than usual in spite of the excellent, ethical character of the exhibits. The Council regrets this especially as our exhibitors are very carefully selected and their joint exhibits give us really a technical post-graduate course in current advances in the armamentarium of the physician and surgeon. The registered attendance—341—was excellent for the session.

THE POLIOMYELITIS SITUATION

The outstanding feature of the Owensboro Session was the bringing up to date of the present status of our knowledge of Poliomyelitis. The observations of approximately three hundred cases in the State in the past three months and the assembling of excellent epidemiological data by Doctor Allen, the Health Officer of Fayette County, was a distinct contribution to the knowledge of methods of fighting this serious disease. As chances are that we will have sporadic cases during the next few months and as there is serious danger of the extension of the area of infection next summer, it is important that our physicians and health officers be on their guard against this disease.

The diagnosis in the sporadic cases is quite frequently not made until the paralysis develops. The disease is usually ushered in by a gastro-intestinal attack, although sometimes it is naso-pharyngeal. The most striking early symptom is the stiffness of the muscles along the spinal column and the shielding of this area from pressure. In all doubtful cases a spinal puncture should be done as the early diagnosis can only be confirmed by the increased cell count in the spinal fluid.

When Poliomyelitis is suspected the patient should be isolated in bed in a carefully screened room which should be kept free from flies and other insects. No children should be permitted to come into the room under any circumstances. All contacts should be quite as carefully isolated in their homes for two weeks, as the virus is contained in all the discharges from the body and it is important that vomitus, sputum, and feces and urine should be received in vessels containing strong lime solution and the contents should be buried with a shovel of fresh unslacked lime. As soon as the disease seems to be epidemic in a community all raw milk should be boiled as there is no question but that there

is danger of a spread of the disease in the use of raw milk. Pasteurized milk is safe. While there were a few distinct contact cases in Daviess County, it seems apparent that most of the contagium was spread there from the unsewered sections by flies or other flying insects. While the disease is prevalent in any county, children should be kept at home.

The Owensboro Session of the Kentucky State Medical Association would have been of great value to the people of the State had it done no other thing than given us these positive lessons in the prevention of the spread of Poliomyelitis.

DENTAL HEALTH

The Bureau of Dental Health which is now under the direction of the State Board of Health is of utmost importance to the Medical profession. The State-wide education of children in the care of the teeth will certainly lessen the number of children's diseases and prevent any epidemics of the contagious diseases of the child in school.

The co-operation of the Medical and Dental professions are becoming more allied each day. This means better health in all communities of the State.

The State Board of Health is to be congratulated on securing Dr. R. P. Keene, of Owensboro, as head of this department. He is the right man in the right place.

Let us hope that the medical as well as the dental professions fully co-operate with him in this wonderful undertaking. G. H. H.

OHIO VALLEY MEDICAL ASSOCIATION MEETING

The next meeting of the Ohio Valley Medical Association will be held at the Vendome Hotel, Evansville, Ind., on November 9-10, 1927. A comprehensive program has been prepared by Dr. J. F. Wynn, of Evansville, who is the Secretary. The Association will be entertained by the Vanderburg County Medical Society. All members of the Kentucky State Medical Association have been invited to attend and take part in the proceedings.

Lead Treatment of Carcinoma.—In more than sixty cases of malignant disease Fitzwilliams used a colloidal lead preparation containing 0.2 per cent of lead in the form of lead iodide. He says that this method of treatment cannot, and does not, attempt to replace operation. It is important that the growth should be removed as widely as possible, and the injections then given in the hope that they will attack any small foci which have started in the internal organs.

THE PRESIDENT'S ADDRESS

THE DOCTOR, YESTERDAY, TODAY, AND TOMORROW.*

By R. JULIAN ESTILL, M. D., Lexington.

It has been said, and I fear with some degree of truth, that the Doctor of today is not what the doctor of former times was, the Family Doctor of previous generations was, like the minister, a prophet and seer in his community, he was the family and community mentor to whom all kinds of questions of moment were referred as a court of last resort, his word was final and satisfactory to every one concerned; he was consulted about intimate family problems. Probably a very small part of his tie and thought was given to purely medical subjects, he had not the scientific mind or training of the present day doctor and no doubt in many instances was really a very poor doctor who was unable to make an accurate diagnosis or give rational treatment if a correct diagnosis was made, but there is no gainsaying the fact that he occupied a place in the heart of the family and community which is today totally unknown.

It seems to me that it might be interesting and profitable to us if we could find out why this change has come about and what we can do, if anything, to place the doctor back in the position of love and respect from which he has fallen. It is inconceivable that the many new cults and sects that are thriving today in our midst could have existed when our grandfathers were the family doctors in their respective communities, in other words, their very existence or at least their progress and establishment must be laid in part at the door of the present day doctor and his method of dealing with his patients.

I would have you understand that I would not at all wish to have the doctor of today one whit less scientific or efficient than he is, rather I would say, go on advancing and make as much progress as possible, the more the better, nor would I for one instant underestimate the value of the wonderful advances which have taken place even during my medical lifetime, and which are taking place every day. Osler once said: "It is hardly wise for a doctor to sleep more than eight hours or he will find himself so far behind he will never catch up with the procession." One has only to stop a minute and name some of the tremendous things that have been accomplished in medicine in late years to be duly impress-

ed, and have a proper appreciation of the doctor of today. To mention only a few, like improved sanitation, the practical eradication of typhoid fever, and the work that is now being done to wipe out diphtheria and scarlet fever. One has only to mention a few of the almost superhuman accomplishments of modern day surgery and obstetrics to appreciate what has been done and is still being done to realize what modern medicine has done for humanity. I sometimes wonder if modern medicine is doing more for humanity than modern doctors are doing as individuals.

Undoubtedly the highly trained specialist in any of the several lines of medicine today is rendering a scientific service to humanity which would astound the family doctor of former generations and probably would make him feel that he was not really a doctor at all, but it is not possible that the real reason for the change which has taken place in the standing of the doctor in the community might be that this very selective specialism which means that it takes five or six specialists to make one whole doctor, and that the individual contact and personal side of the association of the patient with his doctor is lessened, is the reason why the old time intimacy is no longer experienced. This may and I believe does to some extent, account for the change in the relationship between the patient and his doctor. I believe, however, there is another potent factor in the changed relationship, we have already referred to the fact that a relatively small part of his time and thought was given to purely medical subjects by the old family doctor, in other words, he was a man who was an "outstanding personality" in his community because he had a broad culture which was greater than that of his clientele. Is that true of the doctors of today? Is it not possible that we of this generation have been in such intense pursuit of our own little special line of medicine that we have lost sight and touch not only with every other branch of medicine, but have neglected all of the broader culture which comes from reading standard lay literature, studying music and art so that they may be appreciated, and all of the other branches of culture that are necessarily so important a part of the life and occupation of the educated people with whom we work and live, is it strange that these people do not look up to us if we are ignorant of the finer things of life which make for broad culture and make one who is versed in these things interesting and sought for companions to educated and cultured people?

I know that no talk to medical men can be of much value unless the treatment is very clearly outlined and in this instance I am going to give you a picture of the ideal doctor

*Read before the Kentucky State Medical Association at Owensboro.

of today who would, I believe, very largely re-establish the doctor to the high estate from which he has fallen.

I would increase rather than decrease the wonderful scientific work that the medical profession of today is doing so that the succeeding generation of doctors can go on still further than we have gone and be able to solve many problems which seem to us today well nigh impossible because of the foundations we bequeath to them as a heritage of our sacrifices and work, however, in order that we may be able to do this it will be necessary for us to consider several things.

I believe that every specialist, regardless of what his work is, should be the outcome of a number of years' experience in general practice. A man will naturally drift into the special line of work he likes best and will devote most of his time and study to that line, so that he will unconsciously after a number of years eliminate other lines of work and develop and perfect himself in the technique of the chosen special line. This will make him a much broader specialist and his work will be far more worthwhile than it could possibly be if he had specialized at the beginning of his medical career. He will always be sufficiently interested in general medicine to read his journals and keep up to some extent with what is being done outside of his special line of work, and he will remember that his patient has an entire body instead of just one organ which might be accounting for the present disability, and in consequence his treatment and management of the patient will be for more satisfactory both to himself and to his patient.

It is not humanly possible for a doctor working under the tremendous strain of present day conditions to work continuously from year to year without taking suitable vacations. I have felt that a doctor can do more and certainly better work in eleven months than he can in twelve. One gets tired and in consequence irritable and the character of work he does under such conditions is not in keeping with his ability or what he does do when he is feeling fit. It is wonderful what a change one experiences in his attitude to his work after a good vacation.

I believe every doctor will do better work and get a great deal more pleasure out of life if he will undertake systematic daily reading of standard lay literature. It is surprising how much can be accomplished by reading one-half an hour each day. One can find many guides for reading which will be interesting and profitable and which will require very little time and will serve the purpose of getting the mind off of medicine in addition to getting a broad culture from reading after

a comparatively short time. This will also add an interest and pleasure which will be very well worth while. Naturally some lines of reading will be more interesting than others, but when once fairly launched in this fascinating pastime one may start almost anywhere and the collateral reading which will unfold itself will reveal enough reading matter to choose from for the rest of your life.

The doctor should cultivate a desire to know something about art, he should hear good music, and in this day of the phonograph and radio there is no lack of opportunity for hearing good music regardless of where you live. This, too, is a form of culture which grows rapidly and one can derive the keenest pleasure and profit from it.

Every doctor should have some kind of hobby. The particular kind of hobby will naturally be decided by the individual tastes; with some it will be hunting, and no end of pleasure can be derived from your dogs and guns. Another may take up fishing, still another may prefer some of the sport games, such as golf, tennis, bowling. These things should be undertaken with the intention of enjoying them and using them to keep one mentally and physically fit to be the very best doctor he is capable of being. One might select some one of the branches of natural science, such as a study of animals or plants, and any of these things will after a little study open up avenues of thought and pleasurable employment that will be surprising.

The family doctor of the past was identified with his church. Too many doctors today are careless or even antagonistic to religion. The doctor must not be a prude, but I do not believe one can do for himself or his community all that he is capable of doing if he is not identified with a church. He is, or should be, an example to his fellowmen and if he is genuinely a Christian and takes his stand fairly and squarely with his church his example will be worth a great deal in his community. This is in contrast to the doctor who tries to use the church to further his own interests; such a man will deceive people very rarely if at all and will be very soon found out. Without being officious, the doctor should take an active interest and help in all civic and community problems. He should be posted on all such things and be able to give accurate and intelligent advice and help in all civic affairs.

Finally, my message to you is this: Be the very best doctor you can be with your ability, training and surrounding; make your patients feel that you are trying to give them the "best you have" and that you are genuinely interested in helping them.

Take good care to conserve as far as possi-

ble your own resources, mental and physical, so that you will feel fit for your task.

Broaden your culture in every way that you can, so that you will be a pleasure to your friends and to yourself when outside of medicine.

Be a Christian gentleman at all times. Stand out squarely and fearlessly in your community for all that is high and good and after all is said and done, one should not have to memorize any code of ethics if this rule was followed.

Take an active and intelligent part in all matters of civic interest and welfare in your community.

If these few suggestions were lived up to by our present-day doctors, I firmly believe that we would have a doctor who would be as much beloved, respected and looked up to as our grandfathers were as the "family doctors" of their day, and I know we would be better doctors and happier men.

ORATION IN SURGERY

EPOCHS IN SURGERY.*

By FRANK T. FORT, M. D., F. A. C. S., Louisville.

The question of the age of man was brought formally to notice by the statement of Darwin in his work on evolution, that man descended from the anthropoidea. After fifty years of intensive study by scientific men of the world, including Sir Arthur Keith and his colleagues of England, it has been practically proven that man has existed on the earth for perhaps one million years. He started as any other animal, with the possible advantage of having a little keener instinct, or perhaps the beginning of reason. As he developed he began to substitute reason, or what might be termed common-sense, for instinct.

The fact is known that certain birds and animals, through instinct, seem to have some knowledge of medicine and surgery. For example, the ibis might have taught mankind the virtue of an enema, as it is known that he introduces water into the rectum with its bill to produce fecal evacuation. Another animal, the hippopotamus, has been known to wound himself with a sharp stick to produce bleeding when his blood pressure became too great and he wanted to relieve his tension. Cats, dogs, birds and many other animals, through instinct, seem to be able to gather their own remedies.

This early period of mankind might be assumed the first epoch in surgery. There is no

written account, hieroglyphics, or other known way of determining just how much mankind in this early period knew of medicine and surgery, but it is fair to believe that in case of fractures and other injuries something was attempted to relieve suffering.

In what might be termed the second epoch in surgery, we have hieroglyphics and writings to corroborate what was known, as this was in the second Egyptian Dynasty, of 4,500 years before Christ. At that time sharp flint was used for opening the abdomen in preparing the body for burial, for incising abscesses, and for other surgical procedures.

Later during this epoch there were some advancing strides made toward attempting to trephine the skull, to treat fractures, etc. Still later there is evidence of their having attempted to extract calculi from the urinary bladder, the bandaging and splinting of fractures, the development of sounds from twigs and other materials for use in the urethra, and the employment of reeds in giving enemas.

At some time during the ascendancy of Egyptian surgery it is stated that nearly every disease had its specialist, and that if one specialist overstepped the bounds of another and the patient died, he suffered death as a punishment for his crime.

Artificial teeth have been found in the mouths of Egyptian mummies, and also splints on fractured limbs.

Shortly thereafter some dissension arose between the priesthood and those who attempted medicine and surgery, and surgery fell into disrepute. Men who opened bodies were looked upon as terrible beings, they were stoned, forced to leave the community, and were not permitted to associate with other people; while those who took the intestines and prepared them for the urns and deposited them in sepulchures were of the priesthood.

It was during this period that the rule was established, in the neighboring country of Babylon, to place all patients on the roadside where everyone passing might confer with them and suggest methods of treatment. This was possibly due to a code promulgated by a previous ruler which prescribed the penalty that, if the patient died the surgeon should have both his hands amputated.

The third epoch in surgery we might consider as the Hindu era. Upon this we are not really enlightened as to the exact date, but it was before the time of Buddha, who lived about 550 years before Christ. During these early days there existed between India and Greece intercommunication which greatly influenced the art and science of the respective countries. It is likely that the Greeks owe much to the ancient Hindus for the growth

*Read before the Kentucky State Medical Association, Owensboro, Ky.

and development of their knowledge.

To quote some of the opinions of western authors: Wise says "It is to the Hindus that we owe the first system of medicine." Cole Broke asserts that the Hindus were teachers, not learners. Cunningham claims "the Indians have the advantage in point of time, and I feel satisfied that the Greeks borrowed much of their philosophy from the east."

Royle has proven beyond doubt the indebtedness of the Greeks and Arabs to the Hindus. Neuberger says the similarity between Indian and Greek medicine is, in its outline and in certain details, so striking that the originality of the Greeks has frequently been questioned and even denied. The Arabs, like the Greeks, also owe a debt of gratitude to the ancient Hindus for the growth and advancement of their knowledge.

Modern medical science of the west, which is principally based on the Grecian system, is thus indirectly dependent for some particulars at least upon the Indian system.

Among the great men of ancient Hindu days, the chief medical authors of repute were Charak, Susrut, and Vag Bhat. Of the three, Susrut was famous more as a surgeon, and to him we owe the first knowledge of the art of surgery in a systematic way. He is reported to have practiced bone and cranial surgery with a special ability, and also to have written a notable book on surgery known as "Susrut Samhita," which was commented upon by several authors. He described in his book many surgical instruments and classified them under two groups, i. e., the blunt and the sharp cutting instruments. He subdivided the blunt instruments into one hundred and one varieties arranged under six classes and uses for about twenty-four different kinds of surgical manipulations of a non-cutting nature. He described about twenty different kinds of sharp implements designed for about eight different kinds of surgical operations of a cutting nature.

The armamentarium of ancient Hindu surgeons consisted of a considerable number of instruments designed for a variety of operations, and many of the instruments of those ancient days, both in their form and use, closely resemble those of modern times.

Among the knives, the Arddhar resembled some of the modern tenotomes, and, as the name signifies, the sharp edge extended only half way along the blade.

The Utalpatra was a double-edge knife, employed for plunging into a deep cavity or abscess.

The Vrhedipatra was the ordinary pattern of surgical scalpel now used in every-day practice in the operating theater. The Deergh Vaktra pattern of Vrhedipatra corresponded

to the curved sharp-pointed bistoury of modern times.

The Mandal Agra knives comprised an interesting group of surgical implements. Susrut employed them for adenoids and certain plastic operations on the eyelids. The large Mandal Agra of Susrut resembled the blade of a tonsil guillotine in its essential feature; the sharp cutting edge of the blade was situated at one extremity which was convex outwardly.

Vag Bhat used a knife in which the blade was curved and moon-shaped, with the sharp edge concave inwardly. It was employed by him for cutting the neck of the fetus during difficult labor. The Mandal Agra of Vag Bhat thus resembled the decapitating hook of modern midwifery.

The Kusupatra had a long blade with a short handle. It was employed chiefly for cutting very deeply. Some of the modern amputation and resection knives appear to bear resemblance to this class of knife.

Among the Swastika, or forceps, the Singh Mukka Swastika of the past has retained its use and form and represents the lion forceps of the present-day and which is so often used in bone surgery.

The ancient cataract probe, the Dauksanku or tooth sealer, the urethral bougie and rectal dilator of ancient days, were similar to those of the present time. Further, the Agrabakra or Saraphanka, and the Garbh Sanku of Vag Bhat, closely resembled the lithotomy scoop and the traction hook of modern times, respectively.

The coin catcher of ancient days consisted of a bundle of hairs tied to a string and thin linen thread, and was very much like the modern probang in its use and function.

From information gleaned, it seems that these Hindu surgeons were fairly well acquainted with the art of nursing and the management of patients in the hospital. In the treatment of fractures and dislocations, the fracture beds for fractures of the clavicle were similar to the ones used in modern times and clearly applied the fundamental principles in treatment, securing absolute rest of the broken bone and perfect immobilization of the limb. The stone canoe was also utilized in treatment of fractures of the leg and hip.

The ancient surgical instruments were generally made of iron. All cutting implements with sharp edges were composed of steel of a superior quality. Other metals frequently used were copper, tin, zinc, and lead; amalgams and alloys composed of two or more metals were often employed where a soft and flexible metal was required. Many of the salakas such as probes, seekers, directors, applicators, collyrium rods and other such instruments were made of this metal. Bell-metal

was also used. Gold and silver were also sometimes employed. Horns of cattle, preferably those of a cow, were utilized in place of the modern-day cupping glass.

Regarding the nature of operative procedures: many plastic operations on the eyes and nose were undertaken. Cataract was treated by couching as practiced by most of the quack surgeons of the present-day. The rhinoplasty of modern surgery was likely borrowed from the Indian method. Obstetrical work was also done; the fetus was removed from the uterus when the pregnant woman was in trouble. Abscesses were opened, tumors removed, sinuses scraped, wounds properly dressed, and drainage tubes often employed. Though considered a severe and most dangerous type of operation, the removal of calculi from the urinary bladder was also attempted by some surgeons of that time. Great dexterity of hand and manipulative skill were displayed in the dilatation of urethral stricture by straight bougies.

The greatest achievements from the operative point of view in Hindu surgery, however, were obtained in the branch of osteal surgery. Success in cranial surgery was an asset in ancient Hindu times. The reason for the efficiency in bone surgery during that period was likely to be found in the incessant wars which kings waged against one another, there being wounds from arrows, lances, spears, swords, daggers, clubs, etc.

Thus ancient Hindu surgery began with every prospect of greater advancement and development, but after the days of Susrut and in the Buddhist era progress suddenly came to a standstill. People were even forbidden to eat cooked rice which had been touched by the hands of a surgeon. Those who performed dissections were abhorred and offered the lowest seats at social gatherings. To touch a dead animal or human corpse, even for the sake of knowledge, was considered highly irreligious. Consequently, people of the higher ranks abandoned this profession and the art ultimately fell into the hands of the lower classes. Even at the present time some of the barbers and herdsmen are practicing the art of surgery in the rural districts of the country. This was due entirely to the influence of the Buddhist religion.

The fourth epoch in surgery may well be called the Grecian era to which the great Hippocrates belonged. During this period surgery was practiced in a rather indiscriminate way by Esculapians who had charge of the health temples for many years until Hippocrates appeared and brought about the first systematizing of the medical and surgical art. It is Hippocrates to whom we may look backward as the beginner or forerunner of all

modern surgery. He issued many treatises on surgery, and his descriptions of fractures and dislocations are in some instances practically the same as found in modern text books. He was also successful in lithotomy and cranial surgery; he trephined the skull, reduced hernias and practiced herniotomy; he performed lithotomy by both the perineal and suprapubic routes, and was the first to describe pneumothorax and to open and drain the chest for empyema and hydrothorax.

After Hippocrates there was a decline in the practice of surgery, and there was no notable name in this field for more than five hundred years. Galen was the first man of any importance after Hippocrates, and he only came to notice in a surgical way for his procedure for relief and cure of injuries to the brain and spinal cord. Other surgical operations accredited to Galen are: resection of portion of the sternum for caries, and ligation of the temporal artery. He obtained his knowledge of anatomy in Egypt. He was the first to describe the cranial nerves and the sympathetic nervous system.

Celsus reflected the state of surgery in ancient time for several centuries. Aetullus, it is said by Haser, was one of the world's greatest surgeons. He operated for aneurism, cataract, devised a cure for stammering, and treated contractures by a procedure resembling modern tenotomy.

Following the work of Paulus of Aegina, for about five hundred years surgery was in the hands of religious orders. However, surgical practice by the clergy was later forbidden by the council of Tours.

The fifth epoch in surgery, or the era of the middle ages, furnished quite an array of prominent names. Among them were Bruno da Longoburgo, Hugh of Lucea, William of Salicet, Lanfranco and Mondino. Western Europe furnished Henri de Mondeville, Guy de Chauliac, John of Arden, and John Yperman.

Bruno defined surgery and outlined a code of ethics that the surgeon might follow to his and the patient's benefit. In his "*Chirurgia Magna*," published in 1252, he insisted that the essentials of surgery were "to bring separated parts together, to separate those that have become abnormally united, and to extirpate what is superfluous." Bruno advocated the dry treatment of wounds, and devised several procedures in abdominal surgery. If there was difficulty in bringing about reposition of the intestines, he advised that they first be pressed backward with a sponge soaked in warm wine. If the omentum protruded through the wound, all that was black or green must be removed. If the intestines were wounded, they were united with small needle

and silk thread, and care exercised in bringing about complete closure of the wound.

After Bruno the next surgeon of importance was Hugh of Lucca. His most valuable contribution was that of anesthesia. Mandragora served as the base for an anesthetic in those days, though a combination with opium was the favorite. Lucca's method was by inhalation, and this means of administration was utilized for fully a century. Lucca's method of anesthetization consisted of saturating a natural sponge with a solution of mandragora, opium, hyoseyamus, lettuce, camphor, and neuphar. This anodyne was dried, and when the occasion for using it arrived, it was moistened with hot water or steam, and held to the patient's nostrils until sleep was induced.

Even at the present time, in Darkest Africa, coca wine is largely used in surgery. Caesarean sections have been performed under palm wine given the patient to drink. The hot wine is also employed as a sterilizing agent applied to the wound.

Lucca was the first to observe strict cleanliness in the treatment of wounds. He avoided the use of probes and employed compresses soaked in wine.

The greatest of the surgeons of the thirteenth century was William of Saliceto. He (like Lucca) had considerable experience in military surgery, and as the outcome of his wide experience and researches was a systematic work on surgery, "*Cirurgia*." He described in detail wounds of various kinds, the suturing of nerves and the treatment of fractures and dislocations. He distinguished between hemorrhage from arteries and veins. His method of treating hydrocephalus is of particular interest; he rejected opening the head by incision and recommended instead puncturing the scalp and membranes by cautery, a very small opening being made and fluid allowed to escape only drop by drop. Saliceto's influence tended to restore the use of the knife in surgery after that instrument had gradually begun to yield to the canter.

Lafranco was the foremost surgeon of the fourteenth century. He was exiled from Italy and went to France to live where he produced his great work, "*Chirurgia Magna*." He continued the arguments of his great predecessor, Saliceto, not to fix a line between the function of the surgeon and that of the physician, and between practice and theory. He gave a good account of the symptoms of fracture of the skull, and was the first to describe concussion of the brain. He recommended the ligature as a means of arresting hemorrhage, and maintained that exposure to the air favored the formation of pus in wounds. He advised neurotomy in cases of traumatic tetanus. He was especially noted for his method of stitch-

ing nerves completely divided in cross-section. This, he said, was the surest method of re-integrating the nerve. Not only was the nerve itself rehabilitated by this method, but after the operation the restoration of usefulness to the member involved was more complete.

The foremost pupil of Lanfranco was Henri de Mondeville, who, above all, emphasized the necessity of a friendly relationship between physicians and surgeons. Unlike his master, however, he differentiated between practice and theory, and insisted on a practical acquisition of surgical knowledge rather than theoretical. He advocated moderate boldness and did not countenance radical surgical interventions. He was impatient with the surgeon who was every ready to employ surgical remedies when medicinal remedies were indicated. He was evidently not very well satisfied with the state of the surgical art at his period, for he remarked "many more surgeons know how to cause suppuration than to heal a wound."

The most brilliant contemporary of Mondeville was Guy de Chauliac. Like Mondeville he insisted on experience rather than authority. In fracture of the femur, in addition to splints reaching to the foot, he employed a box or trusses of straw to support the limb and attached to the foot a lead weight by means of a cord passing over a small pulley. He advocated that cancer be treated at an early stage and preferably with the knife. He employed the speculum in certain obstetrical cases, and gave an account of the Caesarean operation. His special interest lay in the radical cure of hernia, and he devised six different operations for that purpose. He, moreover, developed the method of taxis by which hernias might be reduced. He adopted stiffened bandages of various kinds, especially employing white of egg for this, and sometimes moulding bandages to the limbs in cases of fractures.

In the sixth epoch of surgery, or the renaissance of surgery, the most important figure and perhaps one of the greatest surgeons before the time of John Hunter, was Ambroise Pare. One of his most trite sayings was: "Mere knowledge without experience does not give the surgeon much self-confidence." He started in life as a barber, and his knowledge was acquired through experience, first as a dresser at the Hotel Dieu, and then as a military surgeon. He treated with success wounds inflicted by sword, lance, halberd, stone, arquebus, pistol, culverin, and other weapons. He described various forms of fracture, including fracture of the neck of the femur, and fracture of the parietal bone with extrusion of brain substance. He was the inventor of arterial forceps and many different kinds of surgical instruments, as well as artificial

limbs and artificial eyes.

Pare suggested syphilis as a cause of aneurism, and hypertrophy of the prostate as a cause of strangury. He performed bronchotomy, neurotomy, staphyloplasty, and used the figure-of-eight suture in cases of harelip. He removed articular concretions, improved the method trephining, and made remarkable advances in surgery of the eye. However, he was most noted for his improvement in the treatment of wounds, and because he introduced the use of the ligature in amputations. In former times custom had prescribed that wounds be treated with boiling oil. Pare conceived the idea, quite accidentally, of utilizing a simple ointment instead of boiling oil. His men recovered much more rapidly under this system. His introduction of ligaturing arteries instead of using the cautery abolished the ancient dread of bleeding to death, and placed surgery on firmer ground.

The seventh or pathological epoch in surgery made slow progress from the time of Vesalius, because of prejudice, until the days of John Hunter, the founder of scientific surgery, a pupil of John Potts and Cheselden, two famous surgeons of that period. Hunter developed the study of abnormalities in bone and soft structures, and during his lifetime preserved about fifteen thousand specimens, having prepared two-thirds or three-fourths of the specimens himself. Anatomy was developed to an extent that had never occurred before nor at any time since. It might be said also that Hunter was the father of American surgery, as many of the most prominent American surgeons were pupils of his.

From Hunter's time onward medical students were obliged to develop a more refined and comprehensive knowledge of anatomy than at any time previously, or we might say, since. There were finer drawings and perspective at that time than possibly since.

It was then believed that surgery had reached its limitations, and Baron Larrey, Napoleon's surgeon, said that it could go no further; all that could be learned about surgery was already known; the only thing left for the future was to acquire what was already known and perfect the technique. After such a statement, the mortality then being more than 60 percent following amputations, if Baron Larrey were living today, when the mortality is from three to four per cent, he would realize how little he knew about what was possible in surgery. It is said of Baron Larrey, that he performed an hundred and twenty-five amputations in one day.

During the seventh epoch in surgery, and before reaching the beginning of the eighth, there were many noted surgeons. Among the greatest of them was Ephriam McDowell, of

Kentucky, who performed the first intentional ovariectomy, although accidental ovariectomy is noted as having been performed in 1701 by Robert Houston of Glasgow.

In this epoch Crawford Long of Georgia discovered anesthesia which has been the greatest help of any discovery in the surgical world. Many other noted men in this epoch could be mentioned but for lack of time and space.

In the eighth epoch of surgery there were great advances which made a revolution of the first magnitude. This was introduced by the practical work of Lister, based upon the experimental work of Pasteur. Knowledge of the life history of the microbe allowed surgeons to work with such a degree of safety that many who were illqualified to use a knife assumed responsibilities for which they were in no way prepared by judgment, experience or learning. This is one of the vices of the eighth epoch in surgery that accompanied its virtues. It was said by Maurice H. Richardson that it was a pity so many patients lived after operations by men who were incompetent as real surgeons.

The work of Pasteur in describing the role of the microbe deserves the greatest credit for bringing to light the basis of Lister's method of treating infections. Prior to the time of Lister and Pasteur, gangrene, erysipelas and septicemia were rampant in nearly all hospitals.

As generally happens in the case of improved methods, the pendulum of surgical thought gravitated too far, and during this epoch the microbe apparently became greater than man, and through the attempt to eliminate the microbe many patients were sacrificed.

In the ninth epoch of surgery, additional discoveries demonstrated the man to be larger than the microbe, and surgeons ceased irrigating the abdominal cavity, they omitted much of the antisepsis formerly used, and adopted methods of asepsis with as little disturbance to the tissues as possible consisting with good surgery. During this period there was practically no part of the body that was not invaded by the surgeon.

It has been said by a prominent anesthetist that a surgeon should so govern himself in dealing with the patient he is operating upon that he had fear of awakening him, and in the carrying out of that theory it was really impossible to do any great harm which might be inflicted without having that in mind.

The tenth epoch in surgery, when reached, will be the biologic era, the problematic, speculative and visionary period. Practically every region of the human body has been surgically explored and pathologic lesions successfully eradicated by scalpel or other means.

The acme of the art of surgery has been about attained, and in the future we will have to look to the development of the science of surgery. This will include every and all means to anticipate and prevent what might otherwise develop into a cause for surgical intervention.

Through biological chemistry, and perhaps other means not yet developed, serums or hormones will be evolved which will permit or postpone aging by bringing about co-ordination of the various known glands and secretions of the body and also of possible glands yet to be discovered. It is believed through these means there will in the future be a great reduction in the amount of surgery and attempts at curative medicine; and that through a better understanding of the chemistry and co-ordination of the glandular system, diseases will be anticipated and prevented. So the tenth epoch should be one rich in prophylaxis and prevention rather than empirical or surgical treatment.

With the improvement in understanding which we are anticipating, there will be less explanatory surgery, the diagnosis of impending and obscure diseases will be clarified, and there will be less doubt concerning the nature and extent of existing pathology when we are forced to resort to surgical intervention as a life-saving measure.

Orientation in the realm of medicine and surgery is greater at present than ever before in the history of the world. When increased knowledge is obtained, perhaps through methods of investigation that may be yet unthought of, we cannot help believing there will be a brighter and greater future for the practice of surgery as a science rather than as formerly as an art. Our knowledge and our armamentarium will be so correlated and readjusted that there should be few failures in either diagnosis or treatment.

The history of surgery throughout the world shows that religion, rather than any other influencing factor, has had the greatest deterring action. People could kill each other with impunity and often escape punishment, but after death the body became sacred, dissection was disallowed, even to touch the dead body was considered sinful because of Pagan or other religious principles, and all research work was strictly forbidden. At times it was thought sinful to even attempt to administer to the ill and afflicted, or to perform surgery even when required to conserve life, because of the fact that such treatment was interfering with the trend of God's will. "Yet I doubt not through the ages one increasing purpose runs,
And the thoughts of men are widened with the process of the suns."

To secure the data presented in the foregoing paper, it was necessary to review numerous historical publications; and since the greater portion of the text has already appeared elsewhere, my indebtedness is acknowledged and thanks extended to both authors and publishers for the privilege exercised in epitomizing and reproducing the material. The subjoined references show, for the most part, the sources from which the data were obtained.

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Postoperative Pulmonary Atelectasis.—Smith and Davidson report seven cases in which pulmonary atelectasis was recognized as a complication of abdominal operative procedures. The clinical course in these patients has followed the usual rule of a sharp onset within twenty-four or forty-eight hours after an abdominal operation, with a few days of decided thermal reaction, tachypnea and tachycardia, the patients showing slight cyanosis, and unilateral pulmonary consolidation, with displacement of the heart toward the effected side. Prompt recovery took place in all. The course was rapid in evolution and was entirely unlike either lobar or broncho-pneumonia. The constitutional reaction of the patient did not parallel the extent of involvement of lung tissue.

ORIGINAL ARTICLES

LIPIODOL IN THE DIAGNOSIS OF PULMONARY LESIONS.*

By OSCAR O. MILLER, M. D., Waverly Hills Sanatorium, Valley Station.

In speaking of pulmonary lesions in connection with the injection of lipiodol, reference is had in particular to the bronchial tree; for in no other thoracic lesion is there such a paucity of roentgenological findings as in dilatation of the bronchi. Even well advanced bronchiectasis may give no radiographic evidence, other than enlargement and elongation of the hilus shadow, with a tendency for the hilus to fuse. As the lesion progresses, the cardio-phrenic angle usually becomes obliterated by the elongation of the hilum shadows, which shows a tendency to spread over the diaphragm to form a triangular area of density at the root as noted by Singer.

Negative x-ray findings, however, are of value, as they definitely exclude a parenchymal lesion. Such negative findings in a patient with persistent cough and a fairly profuse expectoration would naturally lead to a diagnosis of bronchiectasis.

In the interpretation of radiograms, one is dealing with differential densities. Any agency that will enhance opacities or render

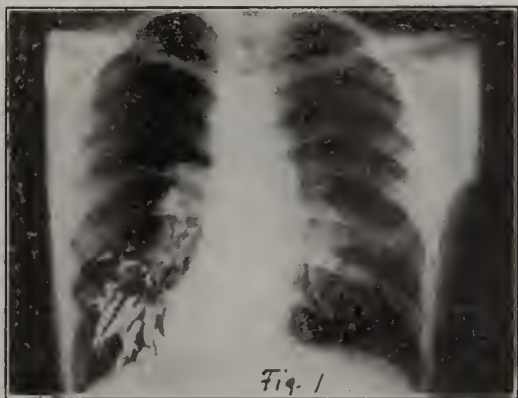


Figure 1.

A. S. Male. Aged 18.—Advanced bronchiectasis, fusiform in type. Patient has had frequent attacks of bronchitis for past four years which responded to treatment. Had an attack Easter, 1926, which persisted. Temperature 102 at this time. Had copious expectoration. No history of pneumonia, abscess or pleurisy. Ten specimens of sputa negative for tubercle bacilli. Physical examination and x-ray negative for tuberculosis. Lipiodol injection confirmed diagnosis of bronchiectasis.



Figure II.

L. McC. Female. Aged 32.—Suppurative lung with localized bronchiectasis, cylindrical in type. Present illness began with pneumonia, August 19, 1926, while away on a visit. Was up and down for ten days; continued to get worse and returned to her home. Diagnosed pneumonia September 1, 1926. Has coughed and expectorated ever since. Sputum very offensive, and moderate in amount.

Dilatation of bronchi and fusing of Lipiodol in lower lobe to form opaque areas, (Pulmonary suppuration).

them more radiolucent than surrounding organs and tissue, is of value. Hence the use of barium in gastro-intestinal work; pneumoperitoneum in visceral tumors; diagnostic pneumothorax in obscure pulmonary lesions; sodium iodide in pyelography; tetroiodo-phenolphthalein in cholecystography; the introduction of air in the spinal canal in ventriculography. These are all methods designed and employed for the purpose of enhancing contrasts. Iodine and its compounds are ideal for this purpose, by reason of the fact that they are opaque to x-ray radiation.

The introduction of a non-irritant, non-poisonous opaque gas would be ideal for pulmonary roentgenography. Since a gaseous mixture has yet to be evolved, one has had to resort to opaque powders, such as bismuth subcarbonate and fluid substances; such as compounds of iodine or bromine. Iodized oil has been known and in use in France for the past twenty-five years as a therapeutic agent. Sicard and Forestier employed this substance in France six years ago in the exploration of various body cavities.

Lipiodol contains 40% iodine, combined with poppy seed oil. It is a stable combination, the iodine being liberated very slowly over a long period of time. This iodine content makes the oil opaque to the x-ray.

Since it is difficult to diagnose a well defined bronchiectasis by x-ray alone, it is na-

*Read before the Jefferson County Medical Society.

turally impossible to determine a bronchiectasis in its incipency without a contrast method. Lipiodol is particularly valuable in outlining the bronchial tree, especially in the lower lobes. Several methods have been devised. The original method spoken of as subglottic, in which the crico-thyroid membrane is pierced under suitable local anesthesia, and the oil injected directly into the trachea through a large needle or cannula. This is a clean, certain method, easily carried out, and

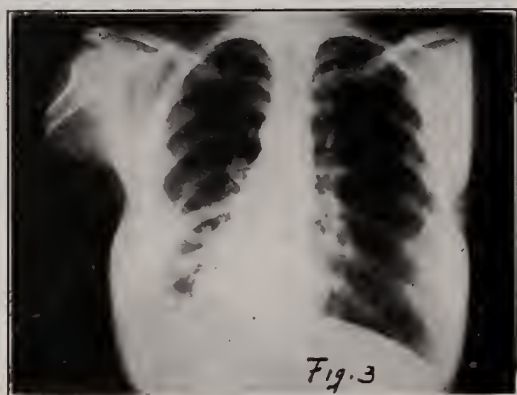


Figure III.

J. McD. Female. Aged 27. Advanced bronchiectasis sacculated or ampula in type in extreme left base. Patient expectorated one pint of sputum daily; no odor. Has had bronchitis since age of 14. Had tonsillectomy 1915 with an uneventful recovery. Empyema 1919 following influenza; had rib resection. Cough and expectoration much worse and continuous since then.

is the method of choice in certain cases. Another method advocated is to anesthetize the fauces, and have the patient drink the solution, hoping by this means to have some of the lipiodol enter the trachea; this method is uncertain and dangerous.

Others have used intubation methods with a cannula on the inside of the tube to which connections are made, and through which the lipiodol is injected. This is a complicated procedure and requires special skill.

The bronchoscopic surgeon selects introduction by means of the bronchoscope.

The simplest procedure is the transglottic method and is carried out as follows:

The pharynx and fauces are first anesthetized by spraying with a 5% butyn solution; as soon as this has taken effect, one cubic centimeter of the butyn solution is introduced directly into the trachea by means of a curved cannula. The cannula is then attached to a syringe loaded with lipiodol, and the tip passed well backward over the dorsum of the tongue, and with the aid of a laryngoscope, the tip is inserted into the larynx and the in-

jection commenced. If one is not in the habit of using the laryngoscopic mirror, the injection may be carried out blindly; and in the majority of patients with good anesthesia, most of the lipiodol will enter the lung.

Ten to fifteen cubic centimeters are usually sufficient, as large amounts blot out all detail and obscure the whole field. As much as 40 cc. has been injected by some, but it carries some risk and no advantages. It is preferable to inject only one lung at a time, although should the necessity arise, I would not hesitate to inject 10 cc. into each lung.

It is difficult to inject the upper lobes; and in the few cases where it was indicated, none of the lipiodol was seen to enter these areas. In one case, where the patient had been placed in a suitable posture to favor entrance of lipiodol into the upper lobe, it accumulated in the trachea. It is possible that the fluoroscope may aid one in guiding it into the desired area.

In bronchiectasis the patients should be inverted and the cavities drained before proceeding with the injection; otherwise coughing persists, with copious expectoration which forces out all lipiodol.

The iodized oil is soothing, and in bronchiectasis seems to exert a beneficial effect on the dilated and diseased bronchi. Lipiodol also finds application in exploring mural abscesses, and fistulous tracts.

The method as outlined is simple and effective and is within the reach of the average practitioner.

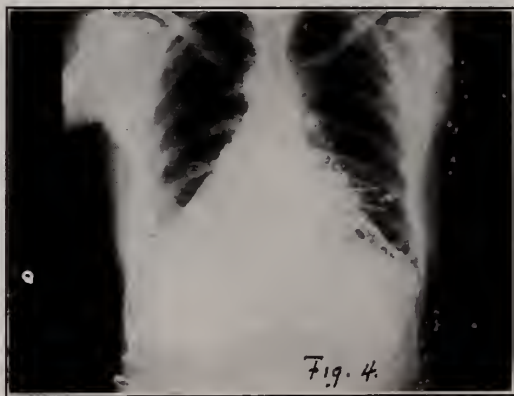


Figure IV.

G. S. Female. Aged 35.—Bronchiectasis, cylindrical in type. Influenza 1918. Very sick, had cough and expectoration for five months. Pneumonia 1924. Blood-streaked sputum from time to time since 1918. No adventitious sounds in chest. Lipiodol injection February 11, 1927.

DISCUSSION.

J. C. Bell, Louisville: As Dr. Miller has pointed out there undoubtedly is a definite place for the use of iodized oil in the diagnosis of pulmon-

any disease. It is relatively easy in some cases to make a diagnosis of abscess of the lung, or of bronchiectasis, while in others such a diagnosis may offer great difficulty. It is in this latter group that the method described will be of use. There are relatively few contraindications to its use and the injection carries with it little or no danger.

Of the four methods of injection in common use, each has advantages in certain cases. The bronchoscopic method must of necessity be limited to a relatively few trained bronchoscopists. The sub-glottic insures that the oil enters directly into the air passages, and with most children and a few adults it is the method of choice. However, it seems unlikely that its use will ever become general. The transglottic method is relatively simple and will undoubtedly be widely used.

In the few cases that we have done we have used the supraglottic method. This was fully described by Dr. Stewart Pritchard and his co-workers in a paper read before the Radiological Society of North America at the annual meeting in Milwaukee, December, 1926. * The procedure is as follows:

If one desires to inject one of the lower lobes the patient is seated in a chair upright and the body inclined slightly toward the affected side. The tongue is drawn forward and the posterior pharynx and the surrounding region anesthetized with 5 per cent butyn of 5 per cent cocaine solution. The oil is then drawn into a syringe to which is attached a curved canula. The tip of the canula is introduced into the mouth and carried backward over the glottis. It is held there and not allowed to touch any of the structures in this region. The oil is then slowly forced outward through the canula and permitted to run into the open glottis, after which it flows rapidly down the trachea and into the main bronchus of the side toward which the body is inclined. The patient may then be fluoroscoped or films made.

In case one desires to inject one of the upper lobes the patient lies on the affected side with the head raised and the procedure is carried out as before indicated. Immediately after the injection the head and shoulders are lowered until the body is inclined at an angle of about 45 degrees from the horizontal. This position is maintained for three minutes and the chest is then fluoroscoped or films made.

The above mentioned authors have tried all of various methods of injection and feel that in the large majority of cases the one just described is the most satisfactory. It offers very little difficulty in execution, can be done with a minimum of equipment, does not require the aid of a trained laryngologist and causes the patient the minimum discomfort and inconvenience.

It has been a privilege to hear Dr. Miller's pa-

per on this subject and he is to be congratulated on the work that he has done.

THE PROBLEM OF MALIGNANCY*

By E. S. ALLEN, Louisville.

In the formation of the blastoderm preparatory to tissue construction cells very early signify their function and relation by arranging themselves in definite layers, and by some biologic law developed under governmental control.

It was Cohnheim's idea that an excess of building material sometimes resulted from hyperkinetic energy, was cast aside, lay dormant, disconnected and not under the biologic law of growth control. That these excess cells by accident, trauma, or chemical change, were stimulated and began a lawless undirected, mitosis, some of them endowed with a pathologic enzyme or excretion, became parasitic in nature, living at the expense of contiguous cells, breaking down all cell defense.

Decades have passed and we are little, or no nearer, a solution of the causative factor in tumor formation, or the development of cancer.

Like electricity we do not know what it is, but are familiar with some of the laws which it obeys. So with cancer, we know that prolonged irritation, chemical or mechanical, are factors in its production.

Many research workers have attempted to demonstrate a parasite, or bacteria, or chemical substance, as an etiological factor in this dreadful malady; but the fact that wherever cancer is metastasized, it is always the type of cell of the original growth and not of the tissue of its new site, is contrary to such a theory.

In experimental cancer, mice can be bred immune to cancer or born with cancer by altering their cell chemistry. The experiments of Maude Slye might be blazing the way, but as yet they do not know whether the foe is inborn or is from the outside. It seems evident that some have a predisposition to cancer while probably the great majority are immune.

Until the causative factor is brought to light we must deal with this deadly enemy by educating the people to consult their physicians before this fatal disease has invaded beyond remedy. After dissemination occurs relief is rare.

Cancer begins as a local cell pathology,

*Read before the Jefferson County Medical Society.

probably just one cell, and then two, karyokinesis is much more rapid than in a normal controlled cell, but as a new growth begins the normal resident cell reacts and if not successful in cytotoxicity begins a defense by means of a cell wall, which is an attempt at isolation or imprisonment, sometimes successfully inhabiting the new growth over long periods as in scirrhous carcinoma, though when the lawless cell is biologically closely related in type to the embryonic cell, the increase in numbers is more rapid than the protective wall can be formed and the invading cells cease to be confined, disseminating in the direction of least resistance. Cancer can usually be recognized while it is yet local and amenable to extirpation except in structures that are deep seated. If every woman knew to consult a physician whenever a nodule, ever so small, occurred in her breast or any condition not physiological in connection with the generative organs and the physician realized that 80 per cent of breast tumors, either are or become malignant, and if he would make a thorough examination of the uterus by palpation and inspection, many of these cases would not present themselves later, hopeless, only to be palliated.

Cancer, as a rule, when recognized as such macroscopically is incurable. In its earliest stage, you might say pre-cancerous, a cure can often be obtained.

When a tumor of the breast shows enlarged axillary glands, or when there is any fixation of the broad ligament in cancer of the uterus, you can with a degree of accuracy predict the day of the funeral. It makes little difference how radical the operation. It has been my experience that the more radical the operation in cancer of the breast and uterus, the earlier metastasis would manifest itself. I mean that in advanced cancer of the breast or uterus, that the patient will probably live longer without a radical operation and in more comfort.

It has been my experience that the type of patients above referred to, out of desperation go from one physician to another, hoping and praying for relief. I have seen these poor women come into the office with a well defined mass in the breast, distinctly palpable axillary glands, breast not fixed, and an operation advised. An incision is made from the top of the shoulder to the level of the umbilicus. A flap reflected from the clavicle, and beginning with the subclavicular glands a clean dissection is made backward, far down on the abdominal wall, the skin incision so wide as to necessitate sliding grafts

to cover the raw surface, and within one or two years the patient is dead from metastatic carcinoma. During life was handicapped with an edematous arm accompanied by constant neuralgia.

All too often when there is well defined gland involvement, some cells have already slipped through and an operation does little more than cripple the patient, increase discomfort and hasten the end.

It must be rare when an operator can dissect, break and tear through the lymphatic vessels and glands without setting free cancerous cells into fertile soil, unprotected and devitalized as a result of trauma. Could we look through a magnifying glass of sufficient power to make a cell appear the size of a pea (after we had dissected an axilla clean, stripped the vessels and brachial plexus of all fat and glandular material) we would see sufficient transplanting of cancerous cells to assure us of an early crop and a very good stand.

I believe every surgeon feels a sense of anatomic pride in his ability to surgically clean out the axilla, for a knowledge of anatomy and technical skill are essential.

It seems to me that the better the axilla is cleaned out the more effectually is the scattering broadcast of cancer cells. Were it practical to change gloves every two minutes and never use the same hemostat or knife the second time, and to expose the axilla while open to a thorough dose of x-ray, one might get by with a sterile field, if so, I think he would give the credit to the x-ray.

Why is it that when a lymph chain is cut or broken, being engorged with cells, that the field is not infected? I am also certain that a great many cells are destroyed by phagocytic action before they can transplant, especially if they have been devitalized by the x-ray. The same rule must apply to the uterus in the Wertheim operation.

Advanced cancer, I mean when it has disseminated, when it is evident that the growth is no longer local, ceases to be a surgical proposition but one to be palliated, made comfortable and very occasionally cured by radiation.

Radiation in the hands of inexperienced is as dangerous as the knife, but scientifically applied the patient, if not cured, is at least not invalidated. Radium and x-ray scientifically applied, which means as to dosage, time and in accordance with the type of cell and its relation to important structures, is the safest method in dealing with advanced cancer, yet I have seen cases where rays have

made fit for infant consumption. All milk, however, no matter how clean and whether certified or not should be boiled in hot weather, say from May 1st to October 1st.

As to the question of fermentative diarrhea: Our ideas have undergone many changes on that subject. We find more fermentative diarrhea in summer when the weather is hot than at any other time. The heat must have something to do with the cause. Most authorities think it acts somewhat in this way: the digestive juices do not function, and as a result the food lies in the upper intestinal tract and stomach in a poorly digested state, and the bacteria which are normally present in these regions attack the food and ferment it. The colon bacillus is probably the most common organism. It is certainly true that in cases of gastroenteritis we find bacteria growing in the upper portions of the small intestine and stomach which ordinarily are practically sterile.

It is now believed by some authorities that infection is responsible for many of the diarrheas of infancy, such as otitis media, tonsillitis, mastoiditis, etc. Marriott, of St. Louis, has recently suggested that the mastoid is often responsible, but there seems to be some difficulty in diagnosing these cases. The child may show no ear symptoms whatever, the ear drums are normal, there is no tenderness over the mastoid, yet Marriott seems to be able to make the diagnosis and by draining the mastoid has saved many of his patients.

The treatment of intestinal intoxication deserves comment: By intoxication I mean those cases of gastroenteritis which are associated with fever and extreme toxic symptoms, such as nervous manifestations, convulsions, coma, twitchings, etc. These patients are likely to succumb in spite of intensive treatment, but in many cases intensive treatment will do some good. In the first place, these babies should be starved, their digestive capacity is practically nil, they should be starved anywhere from one to three days, or even four to five days in severe cases. Of course that means food has to be introduced in some other available way. If fluids, especially saline and glucose solutions, are given these babies through the veins or in the skin, they get along fairly well; but if the child is to be starved for the length of time mentioned it must be given some blood, and that is best administered intravenously. In serious cases of intestinal intoxication I have never seen as good results as I would like from intraperitoneal or subcutaneous injections. The circulation does not seem to absorb the blood, it remains in the place injected without being absorbed. In serious cases blood or glucose should be introduced into the veins if results are to be expected.

The value of blood transfusion in cases of intestinal intoxication cannot be overestimated,

and in every severe case the patient should have at least one sometimes several intravenous transfusions.

T. Cook Smith: I wish to thank Dr. Barbour for his very excellent exposition of a large subject in such a short space of time. There is very little left to be said, but a few things may be reiterated to advantage.

We can never lose sight of the fact that a fatal case of summer diarrhea in a breast fed child is practically unknown unless the child has received some other food in addition. The majority of these patients who die of this disease have been malnourished for a long time. This leads us to believe that one of the chief measures of prophylaxis is to keep every infant in as good nutrition as possible.

It has been said by Sir Arthur Newsholme that the infant mortality record of the community is an accurate index to the degree of efficiency of its public health system. I mention this because certain writers have decried efforts to save these very ill infants, attempting to show that the decrease of infant mortality increases the mortality of childhood. Statistics actually show that with every decrease in infant mortality there is a decrease in the mortality for all ages of childhood.

In thinking of treating the more serious cases of summer diarrhea, it must be borne in mind that many of the symptoms and ill results are due to the bankruptcy of the individual's water metabolism. Several factors play a part in retaining fluids in the tissues of the organism. The inorganic salts are an important factor, and the fact that they are lost in large quantities in the stools suggest that Ringer's solution would be better given by mouth than plain water. It has been shown that plain water forced in huge quantities in a normal animal will produce intoxication by depleting the body store of inorganic salts. Normal saline or Ringer's solution forced in any quantity will not produce any symptoms. Fluids of course should be forced by all methods, by mouth, by intraperitoneal injection, and under the skin.

Blood transfusion restores an added factor, which may be depleted in these cases by increasing the proteins and other colloidal factors in water retention.

All of these methods should be used early enough, but unfortunately prognosis of a specific case is very hard to determine. It makes me feel that if we had seen as many cases and had lived as long as Dr. Barbour has, we might be able to determine with more certainty, as he probably can, which case will be severe, and which will be mild. If we know that a certain case is of the severe type, I believe in acting quickly, using starvation, giving fluids freely, and giving blood transfusion early enough to be of real advantage.

Philip F. Barbour (in closing): I appreciate the discussion. I would like to say that we have lost more children, and I think more children have been made ill, from eating ice cream than anything else. Time and again I have seen a child eat ice cream and shortly thereafter have diarrhea.

If you will follow the reports on examination of milk and ice cream in the city, it will be found that certified milk contains 10,000 bacteria, and the best ice cream shows from 250,000 to 2,000,000 bacteria. It is little wonder that children become ill after eating such ice cream.

I believe the best plan in the treatment of diarrhea in infants is to starve them for the first twenty-four hours, then give them plenty of food of a type which they can digest. Under this method many of the troubles from diarrhea can be prevented.

SOME MODERN CONCEPTS RELATIVE TO HEART DISEASE.*

By EMMET F. HORINE, Louisville.

Changes in our knowledge concerning diseases of the heart have been so rapid that it has been difficult indeed to keep pace with them. So recent are many of the most important developments that they are not fully understood and appreciated. My purpose is merely to review a few of the altered ideas resulting from the newer knowledge and to emphasize the importance of the condition known as effort syndrome.

One of the leading advances is the relegation to the background of the older idea of the undue importance of valve lesions with accompanying "back pressure." As most of you remember, we were led twenty years ago, to believe that a thorough knowledge of "leaking valves" constituted about all that it was necessary to know about hearts. Today we consider the important questions demanding answer to be: what is the etiology and what is the condition of the heart muscle itself. Of course, determination of any real valvular lesion is also made because we have learned that certain defects signify more or less myocardial change. Finally the exact rhythm is carefully determined and the functional capacity of the heart estimated. With all of these factors worked out a fairly accurate prognosis may be made.

DIAGNOSIS.

A complete heart diagnosis should include the following points:

1. Etiology and whether active or inactive.
2. Structural changes: valvular heart disease, mitral stenosis, (aortic insufficiency, aortic stenosis, etc.) or myocardial changes.

3. Rhythm whether normal or abnormal.

4. Functional condition: An estimation of the capacity of the heart to perform the work required for the particular individual's needs.

ETIOLOGY.

In studying patients presenting heart symptoms it is well to bear in mind all etiological possibilities. The following is a good etiological classification which conforms largely to White and Meyer's grouping:

1. Congenital heart disease.
 2. "Rheumatic" heart disease, resulting from: (a) tonsillitis; (b) chorea; (c) acute rheumatic fever; (d) scarlet fever.
 3. Hypertensive heart disease.
 4. Syphilitic heart disease.
 5. Arteriosclerotic heart disease (the senile heart).
 6. Bacterial endocarditis, due to invasion by known organisms (as pneumococcus, streptococcus hemolyticus, streptococcus viridans, etc.)
 7. Thyroid heart disease: (a) That due to hyperthyroidism; (b) That due to hypothyroidism.
 8. Effort syndrome or "irritable heart" (neurocirculatory asthenia as Lewis terms it).
 9. Toxic heart conditions from metallic poisons, tobacco, coffee, foci of infection, etc.
 10. Diphtheritic heart disease.
 11. Angina pectoris (usually regarded as a symptom).
 12. Coronary occlusion (either the result of thrombosis or embolism).
 13. Emphysema heart.
 14. Rare types of infectious heart disease such as that due to the tubercle bacillus and echinococcus.
 15. Traumatic heart lesions (penetrating wounds, crushes, etc.).
 16. Cardiac tumors, primary or secondary.
- It is admitted that an occasional case comes under observation in which the etiology is so obscure that it must honestly be placed in an unknown group.
- It seems unnecessary to stress the value of determining the etiology. It is self evident that the diagnosis will be more accurate, the prognosis will be clearer and the treatment will be more definitely outlined. Consider for a moment how important it is to find out whether an aortic insufficiency is rheumatic or syphilitic in type.

MURMURS.

It is now fully recognized that a murmur standing alone is not evidence of an organic heart lesion. Heart work demands more than auscultation which may reveal a murmur to which a diagnosis is attached. As I have stated previously I have personal knowledge of many patients who have gone through years

*Read before the Jefferson County Medical Society.

of mental torture and physical inactivity because of the chance discovery of a murmur which caused the examiner to give a grave prognosis and to prohibit any except the very lightest exercise. Thus believing that any immoderate exertion might lead to sudden death they have deteriorated both physically and mentally. Effort syndrome frequently becomes quite manifest thus further masking the picture. These individuals can, fortunately, be restored when we assure them that they have an absolutely harmless murmur but no organic heart lesion and when we insist on regular exercise so that they may regain their physical status.

One of the most frequently encountered murmurs is the apical systolic. Because of its frequency and because a diagnosis of mitral regurgitation was always tagged to such a murmur this valve lesion was, in the past, considered to be the most common type. Even at present such a diagnosis is frequently given as the cause of death though Mackenzie has stated that no one ever died of "mitral regurgitation." We feel that pure, uncomplicated mitral regurgitation is rarely present and during the past five years I cannot recall a single case though apical systolic murmurs were often found. Not a few combined mitral lesions have been encountered as also functional mitral insufficiencies due to probable relaxation of the musculo-membranous ring at the mitral orifice. The point that I desire to make is that apical systolic murmurs alone rarely indicate actual organic valvular change.

The older teaching was that an apical systolic murmur transmitted laterally to the left and heard at the lower angle of the scapula posteriorly indicated organic mitral insufficiency. The modern teaching resulting from the enormous army experience is that no systolic murmur standing alone whatever its type, intensity or transmission can be regarded as evidence of an organic heart lesion. The army examinations disclosed systolic murmurs with such frequency in normal individuals that their presence was not considered a cause for rejection. Only when the heart is enlarged, presents a purring thrill or exhibits evidence of myocardial insufficiency need a systolic murmur be regarded as of any significance and even then it is not the murmur but the related findings that are important (Lewis).

In my experience systolic murmurs are encountered in the second interspace to the left of the sternum somewhat more frequently than are the apical ones. Often these pulmonary systolic murmurs are heard best and sometimes only in the recumbent posture. They are usually loudest at the end of expiration

with the breath held. Such murmurs are of no significance as indicating an organic lesion unless a distinct thrill is present along with general cyanosis. With the thrill and cyanosis accompanying the murmur a congenital pulmonary stenosis may be diagnosed.

A less common systolic murmur, though equally insignificant, is the one encountered at the second right interspace. Finding such a murmur in the past we were taught to diagnose aortic stenosis. We now know that the criteria for a diagnosis of aortic stenosis are a definite purring systolic thrill at the base accompanied by a slowly rising and long-sustained pulse and cardiac enlargement. The murmur itself has merely attracted our attention and caused us to search for the real diagnostic points.

Diastolic murmurs in the second or third interspace either to the right or the left of the sternum may or may not be organic. When such a murmur is discovered not only should a careful survey of the heart be made but a Wassermann should also be run. While it is true that the majority of diastolic murmurs in this area indicate an organic aortic regurgitation either of the rheumatic or syphilitic type, it is possible to have a functional aortic diastolic murmur especially in children as pointed out by Morse (*Arch. Ped.* 41: 559-560, August, 1924). These functional murmurs show downward transmission and may be heard at the apex so that considerable care must be exercised in differentiating them from the organic lesions.

A real diastolic murmur at the apex is indicative of a mitral stenosis provided a murmur transmitted from the base can be excluded. In the past too much reliance has been placed on so-called presystolic murmurs in the diagnosis of mitral stenosis as Reid has shown (*Journal A. M. A.*, 77: 1648-1650, Nov. 19, 1921). As he states there is a crescendo, early systolic murmur which is not indicative of mitral stenosis but which may be easily taken for a late diastolic or true presystolic murmur. The true presystolic murmurs are rarely found unaccompanied by early diastolic ones and therefore it is far safer to rely on the real diastolic murmurs than on so-called presystolic ones in diagnosing mitral stenosis.

CARDIAC ARRHYTHMIAS.

All of our real knowledge of the nature and significance of the cardiac arrhythmias has been developed within the past few decades. Thorough consideration has been given them by other essayists so that I shall not attempt a repetition. Electrocardiograms are still necessary in certain types of arrhythmia though the need for graphic records in the elucidation of other types is less apparent. However,

though reliance upon the electrocardiograph is not often so vital for the arrhythmias increasing dependence is being placed on it for the determination of myocardial changes. The value of electrocardiographic examination in individuals forty or more years of age is very great, in fact the tendency seems to be to underestimate rather than overestimate the importance of such studies, even though the rhythm is entirely regular. It is absolutely true that electrocardiograms will elucidate many heart cases otherwise not understandable.

EFFORT SYNDROME.

Although Da Costa first described the "irritable heart of soldiers" in 1871 and also mentioned its presence in the civil population the older text-books practically ignore it. Because of this I desire to call it to your attention. Da Costa encountered it frequently during the American Civil War among soldiers who began heavy field duty shortly after attacks of enteritis which was so prevalent. In the late war we had ample opportunity of studying large groups of such patients. Usually the individual came from a sedentary civil occupation, was of a nervous type, perhaps harbored a focus of infection and developed effort syndrome following intensive training. Or perhaps he would develop a mild coryza or any other type of infection and his company would have to make a long forced march with the result that the condition would become manifest. In civil life the condition frequently develops following various infections when convalescence is not properly supervised and the patient begins strenuous exercise too early. Once present and without proper treatment effort syndrome may persist for months or years.

Effort syndrome has been variously known as the "irritable heart of soldiers", "neuro-circulatory asthenia" (Lewis), "functional heart disease" and "disordered action of the heart." No actual heart disease exists but uncomfortable symptoms such as palpitation, precordial pain and oppression, dyspnoea and perhaps dizziness appear even after slight physical effort or excitement. The symptoms are entirely out of all proportion to the amount of exertion required to provoke them. Often the hands, when in a dependent position, become cyanotic and they are also cold and clammy. The heart is always normal in size and contour but occasionally a systolic murmur may be audible either at the apex or base. The presence of such a murmur is often confusing if one fails to remember that it is of no significance unless actual signs of organic heart disease are obtainable. Sinus arrhythmia is often quite noticeable as the heart slows after slight exercise in such cases and unless

this irregularity is recognized added confusion may exist in the mind of the examiner.

The diagnosis of effort syndrome should not offer any great difficulty provided a careful history is obtained and the essential features of the condition borne in mind. A basal metabolism examination is frequently necessary to rule out hyperthyroidism. Also early syphilitic or rheumatic heart disease must be carefully excluded.

The prognosis is good provided nervous instability is not too manifest and provided full cooperation is obtained from the patient for a sufficient period.

The treatment consists in primarily removing any possible focus of infection about the body. Then the entire proposition must be literally "sold" to the patient. He must be made to realize that though his symptoms are quite manifest the thorough examination which has been made does not disclose any evidence whatever of organic heart disease. The necessity for his full cooperation in a carefully supervised system of exercises should be emphasized. He should not be discouraged because of the appearance of the symptoms after slight exercise at first but he must rest a few minutes and then continue. Gradually by so doing his exercise tolerance will improve and within two or three months a cure may be expected.

If I have been able to impress you with the necessity for an etiological diagnosis and with the relative insignificance of systolic murmurs this effort will not have been in vain.

DISCUSSION.

J. Rowan Morrison: It was with great pleasure that I listened to Dr. Horine's paper concerning the modern concepts of heart disease. His tables covered the essential points and showed their relative importance.

One thing we should particularly discuss, in regard to the modern aspects of heart disease, is the etiological factors. I believe I am able to determine more about heart disease from a carefully taken history than almost any other method of procedure. By a carefully taken history is meant, where you take time to talk at length with the patient, obtain his confidence, ascertain all about his previous illnesses, infections, mode of life, etc.

The greatest improvements in gastrointestinal diagnosis have been made by gastroenterologists who have taken the time to secure very careful histories relative to the gastrointestinal tract, and they can make a diagnosis of gastric ulcer, duodenal ulcer, gall stones, etc., many times before the patient is examined roentgenographically. Of course, their diagnoses are always confirmed by the roentgenologist. When we, as medical practitioners, are willing to spend more

time in taking careful histories, we are going to succeed in increasing our knowledge concerning heart disease. We will then be able to better appreciate the importance of the lesions which Dr. Horine has described.

During the world war, as a member of the advisory board for this district, I had considerable experience in the study of heart lesions. When a man presented the so-called effort syndrome, we thought there must be a great deal of "back-firing" and we did not know what to do about it. These men came to us after a physician had examined them from an orthopedic standpoint, after another physician had examined them for hernia and other surgical abnormalities, etc. with negative findings. The men were often excited and nervous with pulse of 120 to 130. What were we to do with them, send them to the hospital? We found they could not be handled in that way according to the manual. In some instances by keeping the men quiet in a dark room for a time the pulse rate would be found normal. Unquestionably many of these men had no cardiac disease, they were simply scared and excited.

Referring to the point made by Dr. Horine in regard to this kind of heart trouble in civil life. With the ordinary cases carefully graduated exercise is a most excellent plan of management, but the main thing is to tell the patient the entire story, the whole proposition must be fully explained to them. In mild cases the patient may ascend six flights of stairs and when he returns after a few minutes his pulse rate may be less than while sitting in your office. This gives us a very good line on the amount of exercise the individual is able to take. In the graver type of cases we have to be exceedingly careful about the question of exercise and watch the patient over a long period of time. Exercise is very valuable, but must not be overdone.

The question of the arrhythmias is of great importance. As Dr. Horine has said, I think the electrocardiograph is an excellent instrument in the elucidation of many cases.

I have just read an article by Dr. Cohn in the February issue of the American Heart Journal which shows that, after all, we do not know a great deal yet about heart disease as a public health problem. I was particularly impressed by the statement of Cohn that the reason we have more heart disease now than we had formerly is because our treatment of infectious diseases is more scientific and effective. People do not die from their infections and we see them when they are crippled from infectious diseases, rheumatism, etc. There is a great deal to be said about whether we have really approached this problem in a way which will enable us to secure the best results.

The work that has been done in regard to

rheumatic fever by Swift is most interesting to me. The question is, when a patient has acute rheumatic fever as evidenced by one manifestation or another, how do we know his heart is going to be involved when he recovers from the fever? It is a big question. We do not know. The electrocardiograph tracing taken during the attack often shows that the heart is involved in its essential structures and still there is no evidence of murmur.

McKenzie has shown that in mitral stenosis it is usually from one to four years after the rheumatic disease before the murmur shows itself. That has been my experience in many cases of rheumatism and other infections. We do not know from the standpoint of a murmur whether the heart is involved until long after the patient has recovered from his original infection, although such cases usually show continued rapid rates, increased leucocytosis and slight fever.

The question is, how much rest is advisable and how much effort can the patient safely make? In many cases, under the older methods of management, patients with heart disease were not permitted to take enough exercise. To determine the periods of rest and exercise in cardiac patients requires careful and prolonged study.

The subject is extremely interesting, and I want to congratulate Dr. Horine on his excellent paper.

Wm. A. Jenkins: I wish to agree in the main with what the other speakers have said about the fact that in cardio-vascular diseases we are now employing intensive methods just as we are doing with other disease processes of the body, the various bodily systems, the gastro-intestinal tract, the respiratory tract, etc. We are scrutinizing as deeply, as thoroughly and as comprehensively as our facilities will permit all diseases before we attempt to form any conclusions and therapeutic plans of action. It is true, therefore, that we now study the cardio-vascular mechanism in its entirety very carefully. It is important, as the essayist has said, to determine the etiological factor, because different etiological factors work in a different manner. They affect different anatomical portions of the heart; they produce different symptomatology, and they respond to treatment with great variability. Regarding functional murmurs, they are very common in the young, say from fourteen to seventeen, of both sexes. Perhaps murmurs of this type are observed more commonly in high school girls who are just merging from adolescence into womanhood. In such individuals, very frequently after exercise it is easy to elicit a systolic murmur. As the essayist has said, however, we no longer regard such murmurs as having any special significance. It is common for these murmurs to vary markedly.

They are present today and absent tomorrow. They vary in intensity,—now weak, now strong. They are usually accentuated by exercise. The direction of transmission is inconstant, thus the variability is the chief characteristic of the functional murmur.

A word of caution might be necessary regarding the criteria we are now using to differentiate between functional and organic murmurs. I well remember the statement made by a distinguished professor of medicine to the effect that a heart which shows a murmur without hypertrophy and without other marked symptomatology may be classed as a normal heart. However, this statement cannot be taken as a 100% true. The primary injury to the endocardium and the heart valves takes place at the acute stage of the infection. The superficial endothelium covering the valves and the rings undergo little erosions, the superficial epithelial cells fall off, fibrin exudes and a soft vegetation is formed. After a period of years, two or more, these fibrinous deposits become connective tissue. They contract and thus warping, narrowing or deforming of the valves or rings takes place, producing various types of murmurs.

So far as hypertrophy is concerned, this is the result of added work placed on the heart on account of the damage done. Hypertrophy is a question of years. It does not show to any detectable degree until a number of years after the primary infection, yet during all of this time the patient may have a cardiac murmur and the heart gradually and progressively becomes hypertrophied. This is another reason why the subject of cardiac disease must be studied with care and in its entirety. Clinically we occasionally make a diagnosis of a heart murmur with great confidence, and later after a post mortem happens to be done on this individual, we may find a perfectly normal heart. This fact has been brought forcibly to my attention, particularly since I have been conducting the clinicopathological conference in medical teaching in the Louisville City Hospital during the last fourteen years. I recall a number of cases in which the clinical staff made a diagnosis of certain definite heart murmurs. The patients were carefully examined by a number of men independently. They all agreed to the diagnosis. Death would occur, an autopsy would be performed and the heart would be found perhaps perfectly normal, or there would be evidence of pericarditis but no endocarditis, or there would be some chronic pathology in the lungs. Instances like the above-mentioned teach us to be careful in making a diagnosis of valvular heart disease.

Another interesting phase of the subject is the young girl about fourteen or sixteen who had scarlet fever, tonsillitis, rheumatism or whatnot, when she was eight or nine years old. Now that she is fourteen, some physician accidentally

discovers that she has a mitral stenosis. She is placed in bed, her activities are kept restricted, and the family and the girl are very much frightened. In such cases it is very important that we determine the etiological factor, in order that we may definitely determine whether the lesion is still active and perhaps being fed by a focal infection somewhere, or whether the primary etiological factor has been dead or inactive many years. If this latter phase is true, then we are dealing with a chronic condition and it is a mistake to keep the child in bed. A child with an inactive or a febrile chronic valvular lesion is not a bedfast case. Such a child must be allowed to grow and develop just as any other child. However, the character and extent of their activities and exercises must be supervised and guided by the counsel of a competent medical man. These children must take exercise but they must exercise without exhaustion. Their activities must have professional supervision rather than complete cessation of activity.

Leon L. Solomon: Listening attentively to the splendid paper just read by Dr. Horine, my thoughts recur to Dr. John A. Ouchterlony, master clinician, diagnostician and therapist. No one in his time probably knew more about organic diseases of the heart than Professor Ouchterlony, and no one was better able than he to impart his knowledge to the student. Much that has been said tonight by the essayist and much emphasized by the gentlemen, preceding me, who have discussed the paper, brings to mind the truth of Ouchterlony's position with reference to valvular disease of the heart and other organic heart conditions.

The beautiful lines in Maeterlinck's "Blue Bird" come to mind; I shall not attempt to quote them verbatim. The author would have us understand that, if the living would commune with the dead and if the dead are again to be brought back before the living, we may best do this by talking about them. Proposing to bring our beloved teacher back before us, I mention his name, would pay homage to his master mind and to the service he rendered the profession.

Maeterlinck depicts Mytyl and Tytyl in their search for the Blue Bird of Happiness, finding themselves in a graveyard. There, in "The Land of Memory," the children come into the presence of their grandparents about whom they had heard little or nothing throughout their entire lives. The grandfather and grandmother recognize their beloved children, chide them, remonstrating with them, and say "Everytime you think of us, we wake up and see you again."

Throughout the years I knew Professor Ouchterlony, he was at his best when discussing diseases of the heart. I recall these words: "Provided there is a good muscular system and a good nervous system, no particular harm need come

from organic changes affecting heart valves."

A most embarrassing situation is recalled. It was in '94, during my year's internship at the City Hospital. Professor Ouchterlony was scheduled to deliver a clinical lecture on valvular diseases of the heart. It fell my lot to provide cases for him, to be shown in the old amphitheater, then in front of the hospital building on the top floor.

I remember just how the learned doctor looked; I recall his disappointment when, entering the "Bull Pen," quickly casting about those searching eyes, he saw only five or six students in the benches. The students knew that whatever Ouchterlony had to say on the subject of the heart was the last word to be spoken and yet, a mere handful only were present. Crowded as the benches usually were when Ouchterlony filled the hour, this day of all days they should have been filled to the uttermost.

What was the explanation? The Professor glanced at me, inquiringly. I recall his expression of disgust when I told him that the name of Professor Roberts was on the bulletin board, advertized to do "a bloodless amputation of the hip joint at Sts. Mary & Elizabeth Hospital."

Divesting himself of his fur overcoat, pitching his fur turban to one side, he walked to the middle of the bull pen, grasped a wooden stool, raised it above his head, brought it with great force against the cement floor, breaking it into numberless pieces. And then looking to me to assist him, as he replaced his coat and his cap, he said with his accustomed stammer, more marked because he was excited, "Gentlemen, it requires less skill to cut off a man's leg than it does to make the round of a chair."

A great many things have had to be unlearned in the thirty-three years, since elapsed. In no department is this truer than in cardiac diseases. We have had to unlearn that digitalis is not necessarily the first and last remedy to be given because a patient presents himself with a valvular ailment; we have had to unlearn that the loud blowing mitral lesion, resulting from so-called rheumatic endocarditis, does not necessarily destroy the patient's usefulness in after-life.

In this connection, I recall the injunction of the eminent Nothnagel, advising his pupil to administer a daily dose of digitalis to patients with valvular heart disease. And then, as if to emphasize the propriety of doing what he said, he would reach in his pocket where he kept digitalis leaves, chew a small portion of the drug, remarking that he had had a mitral regurgitation for more than a quarter of a century.

The essayist and the gentlemen who have discussed the paper have so thoroughly covered the field, little may be added of interest. May I again repeat Ouchterlony's words: "Provided the general muscular system is in good condition,

providing the general nervous system is in good condition, permitting a physiological hypertrophy of the embarrassed heart, the afflicted individual should be able to return to society, doing work allotted to him with reasonable ease and possibly with little discomfort for many years."

This must be borne in mind by such individual,—hypertrophy of the heart is in the nature of a loan, granted by a Divine Providence. The conditions attaching to it are similar, if not identical, to conditions attaching to a loan obtained from the banker. The latter carefully scrutinizes the subject to whom the loan is made; he learns about his habits, his customs, his mode of life. Provided the borrower has a good reputation for sobriety, decency and behavior, the loan may remain on the books of the bank indefinitely. Similarly, provided the individual affected with organic heart disease, obtaining the loan of "a compensatory hypertrophy," will deport himself properly, leading a sober and not too strenuous life, his compensation may last for many years.

Surely and certainly, if such patient misbehaves, if the unexpected misfortune of contemporaneous or incidental disease overtakes him, the threat of ruptured compensation at once stares him in the face. God's loan may suddenly be called, the borrower pays the penalty with his life in immediate heart-failure or he pays it slowly, as a chronic invalid with loss of compensation and all of these troubles incident thereto.

I greatly enjoyed Dr. Horine's paper, also the discussions.

Emmet F. Horine (in closing): Dr. Morrison emphasized one of the most important points, namely, the taking of a careful history. Not only will the history point toward the possible etiology, but it will help also in arriving at a fairly definite diagnosis. I certainly agree with what he said.

My reason for mentioning effort syndrome is because of the frequency with which this condition is met in civil life. Practically all patients with definite effort syndrome can be cured provided they are otherwise normal and will co-operate.

With reference to the treatment of effort syndrome: I think it is mentioned in my paper that graduated exercise is important. Also breathing exercises are valuable, because by breathing deeply the vagus is in a measure stimulated with resulting slowing of the rate.

Dr. Morrison and some of the other gentlemen spoke of rheumatic heart disease and the fact that we cannot at once tell how much involvement may have occurred. That is quite true. After an attack of acute rheumatic fever we cannot immediately say whether the heart is or is not permanently damaged. So far as mitral stenosis is concerned, we know that following rheumatic fever several years are re-

quired before the physical signs become manifest.

Studies concerning the frequency of systolic murmurs in young people show that such murmurs may be found in quite a large number. One observer reports as high as 70 per cent of systolic murmurs in children. Another reports 64 per cent, and I believe one places the percentage at 30. So we may say that children will present systolic murmurs in a percentage of from 30 to perhaps 70. We now know that by far the majority of these murmurs indicate no organic lesion. However, the study of these murmurs is helpful, because with a history of acute rheumatic fever or chorea the systolic murmur that may be heard will lead to searching examination and the detection of an accompanying late diastolic apical murmur indicative of mitral stenosis.

Heart failure itself and the actual accompanying hypertrophy are of considerable interest. Most observers believe that in mitral stenosis, for example, we have late evidence of a rather widespread infection of the myocardium that existed at the time of the acute rheumatic fever. It is this involvement of the myocardium which constitutes the serious menace of mitral stenosis. In experimental work the heart valves of animals have been destroyed, and yet such animals survived for years afterward. Of course there we have primarily a healthy myocardium. This being true the destruction of the heart valve does not affect the animal to the extent that myocardial injury would.

Concerning angina pectoris: As mentioned in the paper, at the present time we are regarding it more as a symptom than a distinct entity. With reference to advanced heart failure there are two fairly separate and distinct types: (1) The congestive in which oedema is predominant and (2) The anginal in which substernal pain is present. More or less dyspnoea is present in both types. In the first type edema of the lower extremities becomes manifest and later a generalized edema may make its appearance. In the second type edema is not prominent but attacks of substernal and precordial pain are manifest on slight exertion at the beginning while later attacks of pain may appear with the patient at rest.

Concerning the statement quoted by Dr. Anderson that no one ever survived the third attack of angina pectoris I would suggest that what was specifically meant was the status anginosus. In status anginosus the pain is excruciating and persists for minutes or hours instead of seconds as in anginal failure attacks which are momentary. We now recognize the status anginosus as indicative of an acute occlusion of one of the branches of the coronary arteries. Death occurs in approximately fifty per cent of those having only a single seizure. With additional

attacks death is far more likely to occur though I have seen a few who survived for a period more than three attacks.

SOME DIGESTIVE DISTURBANCES IN INFANTS.*

By T. F. MARSHALL, Paducah.

Gastro-intestinal upsets are rare in breast fed infants and usually of little import, while they are serious and common occurrences in the artificially fed baby. They are encountered more frequently in the summer months, especially late summer and early fall. The extreme heat is a predisposing cause, as it causes a systemic depression and a lowered bodily resistance. McClure and Sauer have proven that overdressing during the summer causes an excessive retention of heat that is a contributing factor in producing digestive disturbances. Food is more likely to spoil during hot weather, and milk, which is, and should be the baby's main food, is likely to become an unsuitable diet in the summertime, unless properly cared for.

In young infants a slight digestive disturbance may result seriously, while in older children the symptoms are less severe and the outcome is more favorable with advance in age.

A parenteral infection so lowers the infant's resistance and digestive powers that gastro-intestinal upsets are more likely to occur, adding to the severity of the disease present. An enteral infection carried in or on the utensils, food, etc., of course, may excite a digestive upset.

The quantity and quality of the diet may be the cause of a digestive disturbance which if not recognized and corrected promptly may lead to the more serious gastro-intestinal troubles.

The old saying that an ounce of prevention is worth a pound of cure, leads me to devote this paper to a discussion of some of the digestive disturbances due to improper feeding, that so often predisposes the baby to a severe infection in which a long course of illness ensues and a grave prognosis is essential.

Indigestion in infancy and early childhood may be due to an excess of an otherwise suitable food, to a food containing an excess of one or more of the individual food elements, as an excess of fat, carbohydrates, proteins or salts, or to a fermentation of any of the various food elements as a result of the action of the micro-organisms which normally inhabit the intestinal tract; thereby causing an alimentary indigestion that in itself may closely resemble an infectious diarrhea, this producing a fertile field for the implantation of the

*Read before the Carlisle County Medical Society.

made fit for infant consumption. All milk, however, no matter how clean and whether certified or not should be boiled in hot weather, say from May 1st to October 1st.

As to the question of fermentative diarrhea: Our ideas have undergone many changes on that subject. We find more fermentative diarrhea in summer when the weather is hot than at any other time. The heat must have something to do with the cause. Most authorities think it acts somewhat in this way: the digestive juices do not function, and as a result the food lies in the upper intestinal tract and stomach in a poorly digested state, and the bacteria which are normally present in these regions attack the food and ferment it. The colon bacillus is probably the most common organism. It is certainly true that in cases of gastroenteritis we find bacteria growing in the upper portions of the small intestine and stomach which ordinarily are practically sterile.

It is now believed by some authorities that infection is responsible for many of the diarrheas of infancy, such as otitis media, tonsillitis, mastoiditis, etc. Marriott, of St. Louis, has recently suggested that the mastoid is often responsible, but there seems to be some difficulty in diagnosing these cases. The child may show no ear symptoms whatever, the ear drums are normal, there is no tenderness over the mastoid, yet Marriott seems to be able to make the diagnosis and by draining the mastoid has saved many of his patients.

The treatment of intestinal intoxication deserves comment: By intoxication I mean those cases of gastroenteritis which are associated with fever and extreme toxic symptoms, such as nervous manifestations, convulsions, coma, twitchings, etc. These patients are likely to succumb in spite of intensive treatment, but in many cases intensive treatment will do some good. In the first place, these babies should be starved, their digestive capacity is practically nil, they should be starved anywhere from one to three days, or even four to five days in severe cases. Of course that means food has to be introduced in some other available way. If fluids, especially saline and glucose solutions, are given these babies through the veins or in the skin, they get along fairly well; but if the child is to be starved for the length of time mentioned it must be given some blood, and that is best administered intravenously. In serious cases of intestinal intoxication I have never seen as good results as I would like from intraperitoneal or subcutaneous injections. The circulation does not seem to absorb the blood, it remains in the place injected without being absorbed. In serious cases blood or glucose should be introduced into the veins if results are to be expected.

The value of blood transfusion in cases of intestinal intoxication cannot be overestimated,

and in every severe case the patient should have at least one sometimes several intravenous transfusions.

T. Cook Smith: I wish to thank Dr. Barbour for his very excellent exposition of a large subject in such a short space of time. There is very little left to be said, but a few things may be reiterated to advantage.

We can never lose sight of the fact that a fatal case of summer diarrhea in a breast fed child is practically unknown unless the child has received some other food in addition. The majority of these patients who die of this disease have been malnourished for a long time. This leads us to believe that one of the chief measures of prophylaxis is to keep every infant in as good nutrition as possible.

It has been said by Sir Arthur Newsholme that the infant mortality record of the community is an accurate index to the degree of efficiency of its public health system. I mention this because certain writers have decried efforts to save these very ill infants, attempting to show that the decrease of infant mortality increases the mortality of childhood. Statistics actually show that with every decrease in infant mortality there is a decrease in the mortality for all ages of childhood.

In thinking of treating the more serious cases of summer diarrhea, it must be borne in mind that many of the symptoms and ill results are due to the bankruptcy of the individual's water metabolism. Several factors play a part in retaining fluids in the tissues of the organism. The inorganic salts are an important factor, and the fact that they are lost in large quantities in the stools suggest that Ringer's solution would be better given by mouth than plain water. It has been shown that plain water forced in huge quantities in a normal animal will produce intoxication by depleting the body store of inorganic salts. Normal saline or Ringer's solution forced in any quantity will not produce any symptoms. Fluids of course should be forced by all methods, by mouth, by intraperitoneal injection, and under the skin.

Blood transfusion restores an added factor, which may be depleted in these cases by increasing the proteins and other colloidal factors in water retention.

All of these methods should be used early enough, but unfortunately prognosis of a specific case is very hard to determine. It makes me feel that if we had seen as many cases and had lived as long as Dr. Barbour has, we might be able to determine with more certainty, as he probably can, which case will be severe, and which will be mild. If we know that a certain case is of the severe type, I believe in acting quickly, using starvation, giving fluids freely, and giving blood transfusion early enough to be of real advantage.

Philip F. Barbour (in closing): I appreciate the discussion. I would like to say that we have lost more children, and I think more children have been made ill, from eating ice cream than anything else. Time and again I have seen a child eat ice cream and shortly thereafter have diarrhea.

If you will follow the reports on examination of milk and ice cream in the city, it will be found that certified milk contains 10,000 bacteria, and the best ice cream shows from 250,000 to 2,000,000 bacteria. It is little wonder that children become ill after eating such ice cream.

I believe the best plan in the treatment of diarrhea in infants is to starve them for the first twenty-four hours, then give them plenty of food of a type which they can digest. Under this method many of the troubles from diarrhea can be prevented.

SOME MODERN CONCEPTS RELATIVE TO HEART DISEASE.*

By EMMET F. HORINE, Louisville.

Changes in our knowledge concerning diseases of the heart have been so rapid that it has been difficult indeed to keep pace with them. So recent are many of the most important developments that they are not fully understood and appreciated. My purpose is merely to review a few of the altered ideas resulting from the newer knowledge and to emphasize the importance of the condition known as effort syndrome.

One of the leading advances is the relegation to the background of the older idea of the undue importance of valve lesions with accompanying "back pressure." As most of you remember, we were led twenty years ago, to believe that a thorough knowledge of "leaking valves" constituted about all that it was necessary to know about hearts. Today we consider the important questions demanding answer to be: what is the etiology and what is the condition of the heart muscle itself. Of course, determination of any real valvular lesion is also made because we have learned that certain defects signify more or less myocardial change. Finally the exact rhythm is carefully determined and the functional capacity of the heart estimated. With all of these factors worked out a fairly accurate prognosis may be made.

DIAGNOSIS.

A complete heart diagnosis should include the following points:

1. Etiology and whether active or inactive.
2. Structural changes: valvular heart disease, mitral stenosis, (aortic insufficiency, aortic stenosis, etc.) or myocardial changes.

3. Rhythm whether normal or abnormal.

4. Functional condition: An estimation of the capacity of the heart to perform the work required for the particular individual's needs.

ETIOLOGY.

In studying patients presenting heart symptoms it is well to bear in mind all etiological possibilities. The following is a good etiological classification which conforms largely to White and Meyer's grouping:

1. Congenital heart disease.
2. "Rheumatic" heart disease, resulting from: (a) tonsillitis; (b) chorea; (c) acute rheumatic fever; (d) scarlet fever.
3. Hypertensive heart disease.
4. Syphilitic heart disease.
5. Arteriosclerotic heart disease (the senile heart).

6. Bacterial endocarditis, due to invasion by known organisms (as pneumococcus, streptococcus hemolyticus, streptococcus viridans, etc.)

7. Thyroid heart disease: (a) That due to hyperthyroidism; (b) That due to hypothyroidism.

8. Effort syndrome or "irritable heart" (neurocirculatory asthenia as Lewis terms it).

9. Toxic heart conditions from metallic poisons, tobacco, coffee, foci of infection, etc.

10. Diphtheritic heart disease.

11. Angina pectoris (usually regarded as a symptom).

12. Coronary occlusion (either the result of thrombosis or embolism).

13. Emphysema heart.

14. Rare types of infectious heart disease such as that due to the tubercle bacillus and echinococcus.

15. Traumatic heart lesions (penetrating wounds, crushes, etc.).

16. Cardiac tumors, primary or secondary.

It is admitted that an occasional case comes under observation in which the etiology is so obscure that it must honestly be placed in an unknown group.

It seems unnecessary to stress the value of determining the etiology. It is self evident that the diagnosis will be more accurate, the prognosis will be clearer and the treatment will be more definitely outlined. Consider for a moment how important it is to find out whether an aortic insufficiency is rheumatic or syphilitic in type.

MURMURS.

It is now fully recognized that a murmur standing alone is not evidence of an organic heart lesion. Heart work demands more than auscultation which may reveal a murmur to which a diagnosis is attached. As I have stated previously I have personal knowledge of many patients who have gone through years

*Read before the Jefferson County Medical Society.

of mental torture and physical inactivity because of the chance discovery of a murmur which caused the examiner to give a grave prognosis and to prohibit any except the very lightest exercise. Thus believing that any immoderate exertion might lead to sudden death they have deteriorated both physically and mentally. Effort syndrome frequently becomes quite manifest thus further masking the picture. These individuals can, fortunately, be restored when we assure them that they have an absolutely harmless murmur but no organic heart lesion and when we insist on regular exercise so that they may regain their physical status.

One of the most frequently encountered murmurs is the apical systolic. Because of its frequency and because a diagnosis of mitral regurgitation was always tagged to such a murmur this valve lesion was, in the past, considered to be the most common type. Even at present such a diagnosis is frequently given as the cause of death though Mackenzie has stated that no one ever died of "mitral regurgitation." We feel that pure, uncomplicated mitral regurgitation is rarely present and during the past five years I cannot recall a single case though apical systolic murmurs were often found. Not a few combined mitral lesions have been encountered as also functional mitral insufficiencies due to probable relaxation of the musculo-membranous ring at the mitral orifice. The point that I desire to make is that apical systolic murmurs alone rarely indicate actual organic valvular change.

The older teaching was that an apical systolic murmur transmitted laterally to the left and heard at the lower angle of the scapula posteriorly indicated organic mitral insufficiency. The modern teaching resulting from the enormous army experience is that no systolic murmur standing alone whatever its type, intensity or transmission can be regarded as evidence of an organic heart lesion. The army examinations disclosed systolic murmurs with such frequency in normal individuals that their presence was not considered a cause for rejection. Only when the heart is enlarged, presents a purring thrill or exhibits evidence of myocardial insufficiency need a systolic murmur be regarded as of any significance and even then it is not the murmur but the related findings that are important (Lewis).

In my experience systolic murmurs are encountered in the second interspace to the left of the sternum somewhat more frequently than are the apical ones. Often these pulmonary systolic murmurs are heard best and sometimes only in the recumbent posture. They are usually loudest at the end of expiration

with the breath held. Such murmurs are of no significance as indicating an organic lesion unless a distinct thrill is present along with general cyanosis. With the thrill and cyanosis accompanying the murmur a congenital pulmonary stenosis may be diagnosed.

A less common systolic murmur, though equally insignificant, is the one encountered at the second right interspace. Finding such a murmur in the past we were taught to diagnose aortic stenosis. We now know that the criteria for a diagnosis of aortic stenosis are a definite purring systolic thrill at the base accompanied by a slowly rising and long-sustained pulse and cardiac enlargement. The murmur itself has merely attracted our attention and caused us to search for the real diagnostic points.

Diastolic murmurs in the second or third interspace either to the right or the left of the sternum may or may not be organic. When such a murmur is discovered not only should a careful survey of the heart be made but a Wassermann should also be run. While it is true that the majority of diastolic murmurs in this area indicate an organic aortic regurgitation either of the rheumatic or syphilitic type, it is possible to have a functional aortic diastolic murmur especially in children as pointed out by Morse (*Arch. Ped.* 41: 559-560, August, 1924). These functional murmurs show downward transmission and may be heard at the apex so that considerable care must be exercised in differentiating them from the organic lesions.

A real diastolic murmur at the apex is indicative of a mitral stenosis provided a murmur transmitted from the base can be excluded. In the past too much reliance has been placed on so-called presystolic murmurs in the diagnosis of mitral stenosis as Reid has shown (*Journal A. M. A.*, 77: 1648-1650, Nov. 19, 1921). As he states there is a crescendo, early systolic murmur which is not indicative of mitral stenosis but which may be easily taken for a late diastolic or true presystolic murmur. The true presystolic murmurs are rarely found unaccompanied by early diastolic ones and therefore it is far safer to rely on the real diastolic murmurs than on so-called presystolic ones in diagnosing mitral stenosis.

CARDIAC ARRHYTHMIAS.

All of our real knowledge of the nature and significance of the cardiac arrhythmias has been developed within the past few decades. Thorough consideration has been given them by other essayists so that I shall not attempt a repetition. Electrocardiograms are still necessary in certain types of arrhythmia though the need for graphic records in the elucidation of other types is less apparent. However,

though reliance upon the electrocardiograph is not often so vital for the arrhythmias increasing dependence is being placed on it for the determination of myocardial changes. The value of electrocardiographic examination in individuals forty or more years of age is very great, in fact the tendency seems to be to underestimate rather than overestimate the importance of such studies, even though the rhythm is entirely regular. It is absolutely true that electrocardiograms will elucidate many heart cases otherwise not understandable.

EFFORT SYNDROME.

Although Da Costa first described the "irritable heart of soldiers" in 1871 and also mentioned its presence in the civil population the older text-books practically ignore it. Because of this I desire to call it to your attention. Da Costa encountered it frequently during the American Civil War among soldiers who began heavy field duty shortly after attacks of enteritis which was so prevalent. In the late war we had ample opportunity of studying large groups of such patients. Usually the individual came from a sedentary civil occupation, was of a nervous type, perhaps harbored a focus of infection and developed effort syndrome following intensive training. Or perhaps he would develop a mild erysipeloid or any other type of infection and his company would have to make a long forced march with the result that the condition would become manifest. In civil life the condition frequently develops following various infections when convalescence is not properly supervised and the patient begins strenuous exercise too early. Once present and without proper treatment effort syndrome may persist for months or years.

Effort syndrome has been variously known as the "irritable heart of soldiers", "neuro-circulatory asthenia" (Lewis), "functional heart disease" and "disordered action of the heart." No actual heart disease exists but uncomfortable symptoms such as palpitation, precordial pain and oppression, dyspnoea and perhaps dizziness appear even after slight physical effort or excitement. The symptoms are entirely out of all proportion to the amount of exertion required to provoke them. Often the hands, when in a dependent position, become cyanotic and they are also cold and clammy. The heart is always normal in size and contour but occasionally a systolic murmur may be audible either at the apex or base. The presence of such a murmur is often confusing if one fails to remember that it is of no significance unless actual signs of organic heart disease are obtainable. Sinus arrhythmia is often quite noticeable as the heart slows after slight exercise in such cases and unless

this irregularity is recognized added confusion may exist in the mind of the examiner.

The diagnosis of effort syndrome should not offer any great difficulty provided a careful history is obtained and the essential features of the condition borne in mind. A basal metabolism examination is frequently necessary to rule out hyperthyroidism. Also early syphilitic or rheumatic heart disease must be carefully excluded.

The prognosis is good provided nervous instability is not too manifest and provided full co-operation is obtained from the patient for a sufficient period.

The treatment consists in primarily removing any possible focus of infection about the body. Then the entire proposition must be literally "sold" to the patient. He must be made to realize that though his symptoms are quite manifest the thorough examination which has been made does not disclose any evidence whatever of organic heart disease. The necessity for his full co-operation in a carefully supervised system of exercises should be emphasized. He should not be discouraged because of the appearance of the symptoms after slight exercise at first but he must rest a few minutes and then continue. Gradually by so doing his exercise tolerance will improve and within two or three months a cure may be expected.

If I have been able to impress you with the necessity for an etiological diagnosis and with the relative insignificance of systolic murmurs this effort will not have been in vain.

DISCUSSION.

J. Rowan Morrison: It was with great pleasure that I listened to Dr. Horine's paper concerning the modern concepts of heart disease. His tables covered the essential points and showed their relative importance.

One thing we should particularly discuss, in regard to the modern aspects of heart disease, is the etiological factors. I believe I am able to determine more about heart disease from a carefully taken history than almost any other method of procedure. By a carefully taken history is meant, where you take time to talk at length with the patient, obtain his confidence, ascertain all about his previous illnesses, infections, mode of life, etc.

The greatest improvements in gastrointestinal diagnosis have been made by gastroenterologists who have taken the time to secure very careful histories relative to the gastrointestinal tract, and they can make a diagnosis of gastric ulcer, duodenal ulcer, gall stones, etc., many times before the patient is examined roentgenographically. Of course, their diagnoses are always confirmed by the roentgenologist. When we, as medical practitioners, are willing to spend more

time in taking careful histories, we are going to succeed in increasing our knowledge concerning heart disease. We will then be able to better appreciate the importance of the lesions which Dr. Horine has described.

During the world war, as a member of the advisory board for this district, I had considerable experience in the study of heart lesions. When a man presented the so-called effort syndrome, we thought there must be a great deal of "back-firing" and we did not know what to do about it. These men came to us after a physician had examined them from an orthopedic standpoint, after another physician had examined them for hernia and other surgical abnormalities, etc. with negative findings. The men were often excited and nervous with pulse of 120 to 130. What were we to do with them, send them to the hospital? We found they could not be handled in that way according to the manual. In some instances by keeping the men quiet in a dark room for a time the pulse rate would be found normal. Unquestionably many of these men had no cardiac disease, they were simply scared and excited.

Referring to the point made by Dr. Horine in regard to this kind of heart trouble in civil life. With the ordinary cases carefully graduated exercise is a most excellent plan of management, but the main thing is to tell the patient the entire story, the whole proposition must be fully explained to them. In mild cases the patient may ascend six flights of stairs and when he returns after a few minutes his pulse rate may be less than while sitting in your office. This gives us a very good line on the amount of exercise the individual is able to take. In the graver type of cases we have to be exceedingly careful about the question of exercise and watch the patient over a long period of time. Exercise is very valuable, but must not be overdone.

The question of the arrhythmias is of great importance. As Dr. Horine has said, I think the electrocardiograph is an excellent instrument in the elucidation of many cases.

I have just read an article by Dr. Cohn in the February issue of the American Heart Journal which shows that, after all, we do not know a great deal yet about heart disease as a public health problem. I was particularly impressed by the statement of Cohn that the reason we have more heart disease now than we had formerly is because our treatment of infectious diseases is more scientific and effective. People do not die from their infections and we see them when they are crippled from infectious diseases, rheumatism, etc. There is a great deal to be said about whether we have really approached this problem in a way which will enable us to secure the best results.

The work that has been done in regard to

rheumatic fever by Swift is most interesting to me. The question is, when a patient has acute rheumatic fever as evidenced by one manifestation or another, how do we know his heart is going to be involved when he recovers from the fever? It is a big question. We do not know. The electrocardiograph tracing taken during the attack often shows that the heart is involved in its essential structures and still there is no evidence of murmur.

McKenzie has shown that in mitral stenosis it is usually from one to four years after the rheumatic disease before the murmur shows itself. That has been my experience in many cases of rheumatism and other infections. We do not know from the standpoint of a murmur whether the heart is involved until long after the patient has recovered from his original infection, although such cases usually show continued rapid rates, increased leucocytosis and slight fever.

The question is, how much rest is advisable and how much effort can the patient safely make? In many cases, under the older methods of management, patients with heart disease were not permitted to take enough exercise. To determine the periods of rest and exercise in cardiac patients requires careful and prolonged study.

The subject is extremely interesting, and I want to congratulate Dr. Horine on his excellent paper.

Wm. A. Jenkins: I wish to agree in the main with what the other speakers have said about the fact that in cardio-vascular diseases we are now employing intensive methods just as we are doing with other disease processes of the body, the various bodily systems, the gastro-intestinal tract, the respiratory tract, etc. We are scrutinizing as deeply, as thoroughly and as comprehensively as our facilities will permit all diseases before we attempt to form any conclusions and therapeutic plans of action. It is true, therefore, that we now study the cardio-vascular mechanism in its entirety very carefully. It is important, as the essayist has said, to determine the etiological factor, because different etiological factors work in a different manner. They affect different anatomical portions of the heart; they produce different symptomatology, and they respond to treatment with great variability. Regarding functional murmurs, they are very common in the young, say from fourteen to seventeen, of both sexes. Perhaps murmurs of this type are observed more commonly in high school girls who are just merging from adolescence into womanhood. In such individuals, very frequently after exercise it is easy to elicit a systolic murmur. As the essayist has said, however, we no longer regard such murmurs as having any special significance. It is common for these murmurs to vary markedly.

They are present today and absent tomorrow. They vary in intensity,—now weak, now strong. They are usually accentuated by exercise. The direction of transmission is inconstant, thus the variability is the chief characteristic of the functional murmur.

A word of caution might be necessary regarding the criteria we are now using to differentiate between functional and organic murmurs. I well remember the statement made by a distinguished professor of medicine to the effect that a heart which shows a murmur without hypertrophy and without other marked symptomatology may be classed as a normal heart. However, this statement cannot be taken as a 100% true. The primary injury to the endocardium and the heart valves takes place at the acute stage of the infection. The superficial endothelium covering the valves and the rings undergo little erosions, the superficial epithelial cells fall off, fibrin exudes and a soft vegetation is formed. After a period of years, two or more, these fibrinous deposits become connective tissue. They contract and thus warping, narrowing or deforming of the valves or rings takes place, producing various types of murmurs.

So far as hypertrophy is concerned, this is the result of added work placed on the heart on account of the damage done. Hypertrophy is a question of years. It does not show to any detectable degree until a number of years after the primary infection, yet during all of this time the patient may have a cardiac murmur and the heart gradually and progressively becomes hypertrophied. This is another reason why the subject of cardiac disease must be studied with care and in its entirety. Clinically we occasionally make a diagnosis of a heart murmur with great confidence, and later after a post mortem happens to be done on this individual, we may find a perfectly normal heart. This fact has been brought forcibly to my attention, particularly since I have been conducting the clinicopathological conference in medical teaching in the Louisville City Hospital during the last fourteen years. I recall a number of cases in which the clinical staff made a diagnosis of certain definite heart murmurs. The patients were carefully examined by a number of men independently. They all agreed to the diagnosis. Death would occur, an autopsy would be performed and the heart would be found perhaps perfectly normal, or there would be evidence of pericarditis but no endocarditis, or there would be some chronic pathology in the lungs. Instances like the above-mentioned teach us to be careful in making a diagnosis of valvular heart disease.

Another interesting phase of the subject is the young girl about fourteen or sixteen who had scarlet fever, tonsillitis, rheumatism or whatnot, when she was eight or nine years old. Now that she is fourteen, some physician accidentally

discovers that she has a mitral stenosis. She is placed in bed, her activities are kept restricted, and the family and the girl are very much frightened. In such cases it is very important that we determine the etiological factor, in order that we may definitely determine whether the lesion is still active and perhaps being fed by a focal infection somewhere, or whether the primary etiological factor has been dead or inactive many years. If this latter phase is true, then we are dealing with a chronic condition and it is a mistake to keep the child in bed. A child with an inactive or a febrile chronic valvular lesion is not a bedfast case. Such a child must be allowed to grow and develop just as any other child. However, the character and extent of their activities and exercises must be supervised and guided by the counsel of a competent medical man. These children must take exercise but they must exercise without exhaustion. Their activities must have professional supervision rather than complete cessation of activity.

Leon L. Solomon: Listening attentively to the splendid paper just read by Dr. Horine, my thoughts recur to Dr. John A. Ouchterlony, master clinician, diagnostician and therapist. No one in his time probably knew more about organic diseases of the heart than Professor Ouchterlony, and no one was better able than he to impart his knowledge to the student. Much that has been said tonight by the essayist and much emphasized by the gentlemen, preceding me, who have discussed the paper, brings to mind the truth of Ouchterlony's position with reference to valvular disease of the heart and other organic heart conditions.

The beautiful lines in Maeterlinck's "Blue Bird" come to mind; I shall not attempt to quote them verbatim. The author would have us understand that, if the living would commune with the dead and if the dead are again to be brought back before the living, we may best do this by talking about them. Proposing to bring our beloved teacher back before us, I mention his name, would pay homage to his master mind and to the service he rendered the profession.

Maeterlinck depicts Mytyl and Tytyl in their search for the Blue Bird of Happiness, finding themselves in a graveyard. There, in "The Land of Memory," the children come into the presence of their grandparents about whom they had heard little or nothing throughout their entire lives. The grandfather and grandmother recognize their beloved children, chide them, remonstrating with them, and say "Everytime you think of us, we wake up and see you again."

Throughout the years I knew Professor Ouchterlony, he was at his best when discussing diseases of the heart. I recall these words: "Provided there is a good muscular system and a good nervous system, no particular harm need come

from organic changes affecting heart valves."

A most embarrassing situation is recalled. It was in '94, during my year's internship at the City Hospital. Professor Ouchterlony was scheduled to deliver a clinical lecture on valvular diseases of the heart. It fell my lot to provide cases for him, to be shown in the old amphitheater, then in front of the hospital building on the top floor.

I remember just how the learned doctor looked; I recall his disappointment when, entering the "Bull Pen," quickly casting about those searching eyes, he saw only five or six students in the benches. The students knew that whatever Ouchterlong had to say on the subject of the heart was the last word to be spoken and yet, a mere handful only were present. Crowded as the benches usually were when Ouchterlony filled the hour, this day of all days they should have been filled to the uttermost.

What was the explanation? The Professor glanced at me, inquiringly. I recall his expression of disgust when I told him that the name of Professor Roberts was on the bulletin board, advertised to do "a bloodless amputation of the hip joint at Sts. Mary & Elizabeth Hospital."

Divesting himself of his fur overcoat, pitching his fur turban to one side, he walked to the middle of the bull pen, grasped a wooden stool, raised it above his head, brought it with great force against the cement floor, breaking it into numberless pieces. And then looking to me to assist him, as he replaced his coat and his cap, he said with his accustomed stammer, more marked because he was excited, "Gentlemen, it requires less skill to cut off a man's leg than it does to make the round of a chair."

A great many things have had to be unlearned in the thirty-three years, since elapsed. In no department is this truer than in cardiac diseases. We have had to unlearn that digitalis is not necessarily the first and last remedy to be given because a patient presents himself with a valvular ailment; we have had to unlearn that the loud blowing mitral lesion, resulting from so-called rheumatic endocarditis, does not necessarily destroy the patient's usefulness in after-life.

In this connection, I recall the injunction of the eminent Nothnagel, advising his pupil to administer a daily dose of digitalis to patients with valvular heart disease. And then, as if to emphasize the propriety of doing what he said, he would reach in his pocket where he kept digitalis leaves, chew a small portion of the drug, remarking that he had had a mitral regurgitation for more than a quarter of a century.

The essayist and the gentlemen who have discussed the paper have so thoroughly covered the field, little may be added of interest. May I again repeat Ouchterlony's words: "Provided the general muscular system is in good condition,

providing the general nervous system is in good condition, permitting a physiological hypertrophy of the embarrassed heart, the afflicted individual should be able to return to society, doing work allotted to him with reasonable ease and possibly with little discomfort for many years."

This must be borne in mind by such individual,—hypertrophy of the heart is in the nature of a loan, granted by a Divine Providence. The conditions attaching to it are similar, if not identical, to conditions attaching to a loan obtained from the banker. The latter carefully scrutinizes the subject to whom the loan is made; he learns about his habits, his customs, his mode of life. Provided the borrower has a good reputation for sobriety, decency and behavior, the loan may remain on the books of the bank indefinitely. Similarly, provided the individual affected with organic heart disease, obtaining the loan of "a compensatory hypertrophy," will deport himself properly, leading a sober and not too strenuous life, his compensation may last for many years.

Surely and certainly, if such patient misbehaves, if the unexpected misfortune of contemporaneous or incidental disease overtakes him, the threat of ruptured compensation at once stares him in the face. God's loan may suddenly be called, the borrower pays the penalty with his life in immediate heart-failure or he pays slowly, as a chronic invalid with loss of compensation and all of these troubles incident thereto.

I greatly enjoyed Dr. Horine's paper, also the discussions.

Emmet F. Horine (in closing): Dr. Morrison emphasized one of the most important points, namely, the taking of a careful history. Not only will the history point toward the possible etiology, but it will help also in arriving at a fairly definite diagnosis. I certainly agree with what he said.

My reason for mentioning effort syndrome is because of the frequency with which this condition is met in civil life. Practically all patients with definite effort syndrome can be cured provided they are otherwise normal and will co-operate.

With reference to the treatment of effort syndrome: I think it is mentioned in my paper that graduated exercise is important. Also breathing exercises are valuable, because by breathing deeply the vagus is in a measure stimulated with resulting slowing of the rate.

Dr. Morrison and some of the other gentlemen spoke of rheumatic heart disease and the fact that we cannot at once tell how much involvement may have occurred. That is quite true. After an attack of acute rheumatic fever we cannot immediately say whether the heart is or is not permanently damaged. So far as mitral stenosis is concerned, we know that following rheumatic fever several years are re-

quired before the physical signs become manifest.

Studies concerning the frequency of systolic murmurs in young people show that such murmurs may be found in quite a large number. One observer reports as high as 70 per cent of systolic murmurs in children. Another reports 64 per cent, and I believe one places the percentage at 30. So we may say that children will present systolic murmurs in a percentage of from 30 to perhaps 70. We now know that by far the majority of these murmurs indicate no organic lesion. However, the study of these murmurs is helpful, because with a history of acute rheumatic fever or chorea the systolic murmur that may be heard will lead to searching examination and the detection of an accompanying late diastolic apical murmur indicative of mitral stenosis.

Heart failure itself and the actual accompanying hypertrophy are of considerable interest. Most observers believe that in mitral stenosis, for example, we have late evidence of a rather widespread infection of the myocardium that existed at the time of the acute rheumatic fever. It is this involvement of the myocardium which constitutes the serious menace of mitral stenosis. In experimental work the heart valves of animals have been destroyed, and yet such animals survived for years afterward. Of course there we have primarily a healthy myocardium. This being true the destruction of the heart valve does not affect the animal to the extent that myocardial injury would.

Concerning angina pectoris: As mentioned in the paper, at the present time we are regarding it more as a symptom than a distinct entity. With reference to advanced heart failure there are two fairly separate and distinct types: (1) The congestive in which oedema is predominant and (2) The anginal in which substernal pain is present. More or less dyspnoea is present in both types. In the first type edema of the lower extremities becomes manifest and later a generalized edema may make its appearance. In the second type edema is not prominent but attacks of substernal and precordial pain are manifest on slight exertion at the beginning while later attacks of pain may appear with the patient at rest.

Concerning the statement quoted by Dr. Anderson that no one ever survived the third attack of angina pectoris I would suggest that what was specifically meant was the status anginosus. In status anginosus the pain is excruciating and persists for minutes or hours instead of seconds as in anginal failure attacks which are momentary. We now recognize the status anginosus as indicative of an acute occlusion of one of the branches of the coronary arteries. Death occurs in approximately fifty per cent of those having only a single seizure. With additional

attacks death is far more likely to occur though I have seen a few who survived for a period more than three attacks.

SOME DIGESTIVE DISTURBANCES IN INFANTS.*

By T. F. MARSHALL, Paducah.

Gastro-intestinal upsets are rare in breast fed infants and usually of little import, while they are serious and common occurrences in the artificially fed baby. They are encountered more frequently in the summer months, especially late summer and early fall. The extreme heat is a predisposing cause, as it causes a systemic depression and a lowered bodily resistance. McClure and Sauer have proven that overdressing during the summer causes an excessive retention of heat that is a contributing factor in producing digestive disturbances. Food is more likely to spoil during hot weather, and milk, which is, and should be the baby's main food, is likely to become an unsuitable diet in the summertime, unless properly cared for.

In young infants a slight digestive disturbance may result seriously, while in older children the symptoms are less severe and the outcome is more favorable with advance in age.

A parenteral infection so lowers the infant's resistance and digestive powers that gastro-intestinal upsets are more likely to occur, adding to the severity of the disease present. An enteral infection carried in or on the utensils, food, etc., of course, may excite a digestive upset.

The quantity and quality of the diet may be the cause of a digestive disturbance which if not recognized and corrected promptly may lead to the more serious gastro-intestinal troubles.

The old saying that an ounce of prevention is worth a pound of cure, leads me to devote this paper to a discussion of some of the digestive disturbances due to improper feeding, that so often predisposes the baby to a severe infection in which a long course of illness ensues and a grave prognosis is essential.

Indigestion in infancy and early childhood may be due to an excess of an otherwise suitable food, to a food containing an excess of one or more of the individual food elements, as an excess of fat, carbohydrates, proteins or salts, or to a fermentation of any of the various food elements as a result of the action of the micro-organisms which normally inhabit the intestinal tract; thereby causing an alimentary indigestion that in itself may closely resemble an infectious diarrhea, this producing a fertile field for the implantation of the

*Read before the Carlisle County Medical Society.

bacilli.

The pathologic changes in digestive disturbances are usually insignificant and at present not perfectly understood.

The breast fed baby is more apt to be free from digestive disturbances and the symptoms, as a rule, are less severe, while the infant fed with artificial food is most likely to have some disturbances of digestion during the extremely hot season, and the symptoms are more severe, and much more difficult to combat.

Indigestion from an excess of food is not very common in the breast fed, because Nature tends to regulate the supply and demand; and if the baby nurses a too large amount it is usually regurgitated before it can cause any disturbance. Human milk, however, can be too rich in one or all of the food elements. A baby getting such a milk at the breast, will at first gain well in weight, but later they are not apt to make the proper gain; as a rule they are fussy, sleep poorly, vomit, have flatulence, colic and an increase in the number of stools, but it is seldom a serious condition. The treatment depends largely in regulating and lengthening the interval between nursings and at time it may be advisable to administer some water before each nursing. The mother should be instructed to take more exercise, to eat less rich food and to regulate her bowels. It is very seldom necessary to wean the baby because the mother's milk is too rich.

It is not uncommon to find bottle babies getting too much food and still more common to find them getting a food too rich in all the food elements. When the artificially fed baby is getting an excess of a suitable food or one too rich, there is apt to be a loss of appetite, vomiting, flatulence, colic and frequent bowel movements with a loss of weight or a failure to gain. Such a baby is a poor sleeper, is fussy and irritable. By reducing the amount of food or reducing the percentage of the food elements in the formula, the condition soon rights itself in most instances. At times it may be necessary to put the baby on a formula corresponding to one of a much younger infant than the case in hand. If the disturbance is acute from a temporary indiscretion, all food should be withheld for 12 or 24 hours and the intestinal tract emptied; but if the disturbance is chronic, it is not advisable to withhold food.

An excess of fat in the diet is more often the cause of indigestion than any other of the food elements. An excess of fat in breast milk is not common and the symptoms are usually not serious; there may be a loss of appetite, colic, flatulence, vomiting and abnormal stools, and a failure to gain or a loss of

weight in an infant that had previously been making normal gains. The symptoms are usually easy to correct. The mother should reduce her food intake and increase her outdoor exercise and the nursing periods shortened.

In the artificially fed, a digestive disturbance from an excess of fat is serious and more difficult to correct. At first from an excess of fat in the diet, the infant gains in weight, sometimes excessively, later there is a loss of appetite with flatulence, colic, vomiting and abnormal stools, a failure to gain in weight, or more often a rapid loss of weight. The vomitus has an acid odor and is acid in reaction. If the attack is acute there will probably be a rise in temperature, if chronic the temperature is apt to be subnormal. The stools most often contain small soft curds with mucus. At times the stools may resemble curdled milk or they may be gray and shiny in appearance. In chronic cases the stools may be dry and crumbly-soap stools. In others instances the stools are watery, strongly acid and irritate the buttocks. In the excessive loss of fat in the stools, there is also a diminution of the alkali reserve with a tendency to an acidosis, however, unless there is dehydration, symptoms of an acidosis seldom develop. The nutrition is disturbed in long severe cases, the babies often becoming marasmic. In acute cases the prognosis is good, while in chronic cases the prognosis is more grave and depends on the severity and duration of the symptoms and the degree of nutritional disturbance. Recovery is slow and relapses are common. In treating the acute cases the fat should be entirely withdrawn from the diet, and the baby fed on cereal waters, albumin water, etc., gradually adding the fat to the diet in a few days. In chronic cases the fat should be reduced to below the limit of tolerance, or entirely withdrawn for a while, and the baby fed as above or at least fed a low fat diet, such as lactic acid skimmed milk, protein or albumin milk, etc. In a few days the fat should be gradually and cautiously added. It is difficult to re-establish a tolerance for fat after it has once been weakened and it is easy to break it down again. As the reduction of fat in the diet lowers the caloric value of the food, it is necessary to increase the carbohydrates and proteins to bring the caloric value to the requirement of the individual, and this is difficult at times without causing a disturbance of digestion from an excess of one or the other food elements. At times these babies with an intolerance for the fat in cows milk are able to digest the fat in human milk, but occasionally even this is impossible. Lactic acid skimmed milk or protein milk, etc., with an increase in the percent-

age of carbohydrate will answer well and often tide the patient over. Digestive disturbances due to an excess of carbohydrates, is uncommon in breast fed infants and when occurring the symptoms are rarely severe enough to cause a loss in weight, and are usually easily corrected. Flatulence, colic, vomiting of an acid odor and abnormal light green stools, acid in reaction, which irritates the buttocks, are some of the characteristics of too much carbohydrates in the diet of a breast fed baby. In the management of these babies the mother's diet should be reduced and her outdoor exercise increased. This will usually cause a reduction of the sugar percentage in her milk. At times it may be necessary to feed the baby one or more feedings each day of protein or buttermilk.

The artificially fed infant with a disturbance of digestion due to too much carbohydrate in the food, often presents serious and dangerous symptoms. There is usually colic, vomiting and the passage of large irritating green watery stools with mucus. The infant loses weight rapidly, and often there is an increase in temperature in the acute cases. In chronic cases the loss of weight is less rapid, still these babies often change rapidly from a fat individual to the athreptic type, they become toxic, restless and prostrated and their resistance is markedly lowered. It is necessary of course in the treatment to reduce the sugar in the formula, often becoming necessary to use some of the dried milk preparations in which there is a low fat and sugar content with a high protein percent; buttermilk and protein milk answer very well.

An excess of protein in the food is more often found in breast milk during the early part of lactation; nervousness, fatigue and lack of exercise on the part of the mother tend to increase the protein content of the milk, and the baby will have flatulence, colic and restlessness, rarely vomiting; the number of stools is increased, usually they are watery and of a brownish yellow color, sometimes green and often contain mucus and soft fat curds (due to increase peristalsis). The stools are usually alkaline in reaction. The baby is likely to continue to gain in weight in spite of the colic and frequent bowel movements. In correcting this condition it is necessary that the mother be encouraged to take enjoyable outdoor exercise, avoiding fatigue; rest is important and the avoidance of anxiety and worry will act as a factor in reducing the protein in her milk. It may be necessary for the mother to reduce her diet, to lengthen the interval between nursings and sometimes it is well to give the baby some cereal water before each nursing.

An excess of protein causing a digestive

disturbance in the artificially fed baby is more often a chronic condition, although the acute type is not uncommon. Vomiting is not common but there is apt to be an increased number of brownish watery stools, or the stools may be normal except for color and odor. Colic is often present. In the acute type the protein is withdrawn from the diet for a few days and the infant is fed cereal waters or some maltose dextrin or milk sugar mixture. It is necessary to add protein to the diet as soon as possible in order to prevent a nutritional disturbance. In the chronic form there is vomiting of large tough curds, flatulence, colic and the stools may or may not be frequent, but probably containing curds, or constipation may be present with hard dry alkaline stools. There is more often a failure to gain in weight with the concomitant nutritional disturbances. The prognosis is good in the chronic type but grave in the acute form where there is vomiting and diarrhea with large curds. In treating the chronic form, the protein is reduced for a few days, while cereal waters, maltose-dextrin, etc., are added. As protein is the only food element capable of replacing the nitrogenous waste, it is necessary to supply the protein in some form within a short time. Whey mixtures usually answer very well, as the whey is not coagulated by rennin, and therefore does not form curds; cereal diluents, boiling the milk, the addition of citrate of soda (2 grains to the ounce of milk) tend to prevent the formation of large curds. Dried milk and protein milk, etc., contain protein but the casein is not coagulated in large curds, thereby rendering it more digestible. The excess of protein is said to be in the form of casein and not the whey.

While an excess of the salts, sodium, potassium, calcium, etc., is but little understood at present, no doubt they play an important part in the digestive disturbances in infancy.

Indigestion due to fermentation, or fermentation diarrhea, occurs almost always in the infant fed with artificial food. It is brought about by the abnormal growth and activity of the micro-organisms in the contents of the intestines. There are several different bacteria that may be the cause, and the pathologic changes are as a rule light.

Indigestion with fermentation is more often acute rather than chronic. In acute cases the temperature is often high, there is a failure in the appetite, flatulence and colic are common, vomiting is often absent; diarrhea is the most important symptom. The stools are frequent, loose, watery, acid, greenish and irritating, when caused by fermentative changes in the carbohydrates (which is the food most often showing fermentative changes, while

fats are next in frequency), the stools are frothy and contain mucus and small soft curds. When the changes occur in the proteins the stools will be a yellow or brownish color, seldom containing much mucus or curds, they are alkaline in reaction and have a musty odor. The urine is diminished in amount, loss of weight is rapid with rapid dehydration, and toxic symptoms are common.

The prognosis is more favorable when the stools are greenish, with mucus and are irritating—carbohydrate fermentation—then when there is a protein fermentation, loose brownish watery stools with a musty odor. The prognosis is more grave in acute cases, while the chronic type nearly always get well, but are likely to be long drawn-out cases.

The treatment in acute cases: First, clean out the intestinal tract with castor oil, milk of magnesia or if vomiting is present, calomel. Stop all food for 12 or 24 hours, give water freely. The rearrangement or changing the food affords the best means of diminishing the growth and activity of the micro-organisms; in carbohydrate fermentation the sugars, starches and fats are reduced and the protein element is increased, protein milk, buttermilk (skimmed), beef juice, albumin water, etc., are indicated. In protein fermentation, the percentage of protein is reduced and the carbohydrates are increased while the percentage of fat is kept low. This is accomplished by feeding cereal waters, maltose dextrin, dried milk with a low protein percent, etc.

In the chronic cases it is best not to withhold food and sometimes it is inadvisable to administer purgatives, but the diet is so changed that the food element that is causing the fermentation is reduced to the minimum, and methods introduced to limit the toxemia, plenty of water is indicated, per os, per rectum, by hyperdermoclyses and intravenously.

Breast feeding whenever possible, cleanliness all the time, keeping the baby cool, reduction of food during the summer, careful preparation of the food, prompt attention to all upper respiratory infections and prompt correction of all, even the least, digestive disorder will save many babies.

ACUTE LYMPHATIC LEUKEMIA: REPORT OF A CASE.*

By GAYLORD C. HALL, M. D., Louisville.

I would like to report a case in which I was very much chagrined at the outcome, but do not know how it could have been avoided.

The patient was a man about 30 years old whom I had known for four years. He first came to my office with an acute tonsil infection. In the time I had known him he had suffered four severe attacks of tonsilitis, and at the termination of each attack I had urged him to have the tonsils removed. Each time he said he would do so, then postponed it. The last time I saw him prior to his final illness was in November, 1926, at which time he had an acute attack of tonsilitis after attending a football game.

In February, 1927, he had another attack together with what the family physician diagnosed as influenza. At the end of this attack during the night he was seized with severe pain in his leg, and the diagnosis of phlebitis was made. This gradually subsided except for slight swelling and pain in his foot. The patient had then been under the observation of a general physician for six or seven months. However, his symptoms were not so noticeable that he could not attend to his business. This attack of phlebitis may have originated from some focus of infection outside of the tonsils, and efforts were made to determine the cause of it. His teeth were examined by the roentgen-ray and four were found abscessed. Two of them were extracted, and the other two being front teeth in the upper jaw were treated and the dentist pronounced them free of infection after treatment. A Wassermann reaction (blood) was negative. At that time the blood count showed: leucocytes, reported normal; erythrocytes, about 4,000,000; the only feature notable about the differential count was the fact that he had about 40 per cent small leucocytes. This information, however, I did not get until after he had come to me and had been taken care of, for the reason that he told me of the attack he had in February the Wassermann and blood count had been made and everything was found normal.

At the time I saw him his tonsils were more inflamed than usual and I treated him for nearly three weeks. Calcium chloride was administered prior to tonsillectomy, the urine was examined and pronounced normal, and the clotting time of the blood was then determined to be within normal limits. Tonsillectomy was performed under general anesthesia. The operation was rather more dif-

*Read before the Louisville Medico-Chirurgical Society.

feult than usual, but there was nothing especially notable about it. He reacted well following the operation, which was performed on Saturday, and left the hospital the next day (Sunday). On Monday his wife telephoned me that he had some fever. I gave him a purge followed by saline. The next morning he still had fever, but everything about the throat was normal. The following day fever persisted, and he said he had some pain about the heart. Stethoscopic examination revealed very widespread, loud murmurs over the pulmonary area.

I then investigated the laboratory findings which he spoke of having had made two months previously. The examination was made at the Louisville Research Laboratory, and included the urine, blood count, differential count, and blood culture. About that time I asked Dr. E. F. Horine to see the patient and examine his heart. The laboratory report showed a decided amount of albumin in the urine with an enormous number of granular casts. The blood picture showed 3,800,000 erythrocytes, 17,000 leucocytes with 60 per cent lymphocytes.

The patient was then removed to the hospital; that was on Wednesday. On Friday after admission another blood count was made and at that time he had a little more than 3,000,000 erythrocytes, 60,000 leucocytes with 78 per cent lymphocytes. That day I received result of the blood culture which showed positive staphylococcic infection. The following day Dr. Horine saw the man again, but nothing abnormal was discovered about the cardiac apparatus. However, there were detected some decided rough sounds at the base of the left lung, and Dr. J. A. Jenkins was called immediately. He made the diagnosis of lobar pneumonia. The man died within twenty-four hours.

Another blood count was not made, but this was evidently a case of acute leukemia. In view of the fact that the blood culture was positive, and I asked Dr. Allen particularly about this, I have wondered whether or not the staphylococcus could possibly have been a contamination, but he assured me there could not have been any contamination. I have also wondered whether certain infections of the blood stream might not produce some change in the blood-forming organs as to give a picture of the acute lymphatic type described by Henle in contradistinction to true leukemia? The etiology of this type is apparently unknown.

The man unquestionably had a blood stream infection with very rapid disintegration of the cellular elements of the blood and with an enormous increase in lymphocytes terminating in generalized infection showing in

the heart and kidneys and terminating in pneumonia. There was no enlargement of the lymphatics, no palpable cervical glands or of the glands in any other part of the body. There was nothing unusual about the tonsillectomy and the man had no hemorrhage of consequence.

DISCUSSION.

James W. Bruce: Dr. Hall has reported a very interesting case. I do not see how lymphatic leukemia can be excluded in the presence of a leucocyte count of 60,000 with 70 per cent lymphocytes. On the other hand, there was a positive blood culture showing staphylococcic infection. Of course in staphylococcic infection we would expect to find a predominance of polymorphonuclears, but in this case the infection was associated with leukemia, and it may be readily understood how the two forces working together might produce just such an effort as Dr. Hall has described.

I do not see how the condition which developed could have been foreseen in any way. The man had a blood count made several months previously and it was found perfectly normal. I do not believe we should worry very much about 40 per cent lymphocytes.

J. Rowan Morrison: The case reported by Dr. Hall is very interesting to me, and I am glad to have heard the findings, but I cannot offer any suggestions as to the cause of the patient's death.

I have had one case somewhat similar in which the patient was very much below par in general health when he presented for a tonsil operation. Prior to this the blood count had shown nothing remarkable except a moderate number of lymphocytes. Before the operation another blood count was made which showed typical evidences of leukemia. The patient died some time afterward. No operation was performed in this case.

Leon K. Baldauf: Some time ago I saw a case somewhat similar to the one described by Dr. Hall and the patient recovered. Of course an individual may have lymphatic leukemia without any enlargement of the lymph glands. A number of cases have been reported where the lymph glands were not enlarged there being changes in the bone marrow.

Recently there have been reported a number of cases of what is known as mononucleosis where in certain infections there is a great increase in the lymphocytes. The latest issue of the American Journal of the Medical Sciences contains the report of a number of cases particularly where there have been certain infections about the mouth, Vincent's angina, etc.

I saw a case about six months ago where a patient had a leucocyte count of 30,000, a large percentage of them being lymphocytes. I was rather fearful that the patient had lymphatic leukemia, but fever was present which we know

occurs fairly late in lymphatic leukemia. The increase in lymphocytes disappeared and there was no definite enlargement of the lymph glands. The patient recovered and the leucocyte count was normal when he left the city some time afterward.

Longcope has reported a number of cases of infectious mononucleosis, where during various infections for some reason or other the lymphocytes are enormously increased. The disease simulates lymphatic leukemia, but is associated with infection. Some of the patients recover and some do not.

The case reported by Dr. Hall is very suspicious of infectious mononucleosis, because there was a large increase in the lymphocytes, the patient had blood stream infection and the organism was isolated.

Emmet F. Horine: Dr. Hall has certainly reported an extremely interesting case.

The disease was manifestly either infectious mononucleosis or lymphatic leukemia. Against mononucleosis was the fact that the patient did not have Vincent's angina, these two conditions being practically always associated. In addition to the absence of Vincent's organisms the leucocyte count was entirely too high for infectious mononucleosis. Study of the literature shows that in infectious mononucleosis the leucocyte count is under 30,000. Near the termination of his case the leucocyte count was approximately 60,000 with 70 per cent lymphocytes. So I believe we were dealing with a definite acute lymphatic leukemia.

The spleen was carefully examined and no enlargement found. The cervical lymph nodes were not palpable, but a few enlarged glands were noted in the groins and axillae.

The cardiac findings were interesting being those associated with dilatation. A study of the literature concerning acute lymphatic leukemia reveals the fact that often the patient has cardiac signs, that the urine shows albumin with many casts and that death often occurs from a terminal pneumonia.

Gaylord C. Hall (in closing): I thank the gentlemen for their liberal discussion. Cases such as I have reported are always the cause of more or less shock to us and lead us to wonder whether or not in all the operations we undertake we should not subject the patient to the very limit of laboratory investigation.

The striking features about the case are: its rapidity of development, the rapidity with which the leucocytes increased, and the very rapid destruction of the erythrocytes. Within a period of two days there was a reduction of over 1,500,000 red blood cells, and that is the reason I was inclined to believe that the infection manifest in the blood stream was a very active factor in the development of the patient's condition.

PANCREATITIS.*

By M. CASPER, Louisville. .

According to Max Bauman (Munich): "In 1866 Spiess for the first time reported the characteristics of pancreatitis. Since then the number of publications on this subject has been great and in very recent years tremendous."

Pancreatitis is a rather uncommon disease as per one to five thousand cases in Leeds (Eng.) Hospital; though undoubtedly it is becoming more common or maybe just more often recognized than formerly. Like most inflammatory diseases it is divided into acute and chronic. By some a subacute division is made but in reality it is only a milder drawn out acute form. The acute form (according to Fitz) occurs in three forms, or rather stages,—hemorrhagic, gangrenous, and suppurative, in order named. To be sure, death may ensue at any stage without proceeding into the next; also it must be a mild hemorrhagic stage, that gets as far as gangrene. The suppurative form usually breaks down in spots separated by sound (but not necessarily healthy) tissue; though sometimes two or more areas coalesce to form a larger abscess.

The etiology is still disputed, but we are dependent on much of our knowledge from operating room observation; consequently, cholecystitis bears a causal relationship and, if it is not a primary focus extending by the lymphatics (according to Deaver) and also by ductal or infected bile extension, it is usually coexisting in a majority of cases. Also ulcers of stomach, of duodenum and even appendicitis may be predisposing or coexisting. Similarly doubt exists as to whether pancreatitis is (1) infective, (2) auto-digestive, or (3) both. Though this point is in doubt in the early stages, nevertheless both are active agents in its progressive march of symptoms and destruction. The too well fed individual is affected by or perhaps overeating is just a cause of other pathology that later develops into pancreatitis. Improper diet probably aids in paving a way for pancreatitis, and lack of vitamins has been given as a possible predisposing cause. One French author mentions morphinism as a cause but may not the pain of other pathology that started the morphinism more likely be also causal to pancreatitis? Symptoms usually come on after a heavy meal and no doubt many fatal cases of so-called acute indigestion are in reality pancreatitis.

The pain is nearly always sudden, overwhelming, and colicky, though more of a boring nature and simulating ulcer pain rather

*Read before the Franklin County Medical Society.

than gall stone colic, but more severe than either. The pain is not constant nor does it entirely recede, but ebbs and flows with more and less, rather than intermittent, severity. The pain may extend transversely but is located by the patient in the upper abdomen, and point pain very likely is near and somewhat to the left of the middle line; perhaps even extending sometimes to left costal arch. Morphine, though necessary, does not control this violent pain. Quite as important as the characteristic pains is the accompanying collapse of the patient. Acute pain and collapse are due to inflammatory swelling which presses on coeliac plexus, and also explains the deep sudden shock likened to a "solar plexus" blow.

Lumbar discoloration, one symptom, is due to digestion of retropancreatic tissue. Vomiting is also a pronounced symptom, as it is continuous and does not give relief. Vomitus contains food, bile, and mucus; and usually tenaciously persists until operation or death.

Distention and rigidity are slight at first, but come later and indicate active spreading peritonitis. Many other symptoms are mentioned but are either inconstant or so associated with other conditions as to render them negligible as diagnostic aids. Diarrhea with fatty stools when present is a valuable symptom though more often the patient is constipated at first. Loewi's adrenalin mydriatic test which consists of two instillations (four drops, each time thirty minutes apart), of adrenalin 1-1000 solution, and which causes dilatation of pupil in inflammatory pancreatic disease, may be of great value but has not been used in enough cases to secure the pathognomic rank claimed by some as a diagnostic agent. Effusion into the lesser sac accounts for fulness. Later the patient has peritonitis and pus which enter the general peritoneal cavity via Foramen of Winslow, causing general peritonitis which may mask original symptoms.

That the symptom complex is becoming better understood by the profession is vouched for by the increasing number of cases being reported with correct pre-operative diagnosis.

Differential diagnosis is not made in a majority of cases, and in probably fifty percent of the cases the abdomen is opened for other pathology or just for "acute abdomen" which means no specific diagnosis at all.

Pancreatitis is perhaps more frequently confounded with gall stone colic than with any other condition. The diagnostician is often satisfied because the latter is usually present, and, with a history of colic and dyspepsia complex his diagnosis is often seemingly justified. Certainly no operation on gall bladder is complete unless exploration or palpa-

tion of ducts, lymphatics and pancreas is made.

It is not difficult to do a cholecystotomy or even a cholecystectomy but it is difficult indeed to not overlook coexisting pathology that is even more important to the patient.

The pain in gall bladder disease is different from that in pancreatitis, being nearly always to the right of median line and radiating to right shoulder even when stone is lodged at ampulla of Vater, (a condition that closely simulates pancreatitis). Ulcer of stomach with perforation also closely simulates pancreatitis; but the previous history of pain with food, rigidity with the onset of pain, at once after perforation and rapid involvement of general peritoneal cavity serves to rule perforated gastric ulcer out. This is not so, however, with a perforating duodenal ulcer, as we have not the history of pain with food; but nevertheless we have history of hunger pain quite as distinctive. Also board-like abdomen with the pain, which is quite as severe as that of pancreatitis, may aid in differentiation.

Acute intestinal obstruction is perhaps quite as often confused with pancreatitis as any other condition. This is no doubt due to the constipation that is present in both.

Intestinal obstruction is never so sudden in onset, the pain so severe, nor the collapse so early and so marked as in pancreatitis. The vomiting is not severe early in obstruction and comes on more insidiously; also it is never fecal, so-called, in pancreatitis.

One thing is certain; nearly all the conditions with which pancreatitis might be confused are also operative, one notable exception being cancer of the pancreas which is often confused with pancreatitis even with the abdomen open. The pebble-like feeling of the pancreas is different from that of cancer hardness. Visual examination readily differentiates in case of doubt. Cancer age and pancreatitis age are about the same. The treatment should start by eradicating predisposing conditions like cholecystitis, and the like, before they progress to such violent complications as pancreatitis. We could as well go a step farther, which is the ultimate aim of preventive medicine, and so direct the human family by diet, hygiene, removal of focal infection, and the like, so as to forestall even the coexisting if not predisposing factors that follow these human indiscretions. Any patient that gets to the pancreatitis stage has been a badly neglected charge, not necessarily through his doctor's but through his own neglect. We can conceive of no treatment except an operative one once the disease has developed. Operation consists of approach to pancreas, which is done by one of three routes,

via first, gastro-hepatic omentum; second, gastro-ecolic omentum; third, mesocolon. The route is usually determined by ease of approach according to relationship of organs, adhesions, ptosis, etc. Free drainage and release of tension are the requisites; this requires some nicety of technique, as it is important that the pancreatic fluids be kept from coming in contact with other tissues. Drainage per lumbar route has been advocated as ideal, but the extra time consumed on a desperately ill patient often renders this inadvisable.

Surgery is more favorable in the acute form though, remarkably, often relatively so in the chronic. The advent of infiltration anesthesia has been of immense assistance in this very precarious surgical risk.

If the abdomen is opened on another diagnosis the ever present tell-tale fat necrosis at once puts the surgeon on the right track. Fat necrosis areas result from liberated pancreatic lipase saponifying the neutral fats of the omentum and other intra-abdominal fat.

The surgical mortality is high because we are dealing with a violent disease. Perhaps sixty-six percent of those medically treated die, though some undoubtedly get over attacks without any treatment. The after treatment of those patients who do recover from ordeals of a severe operation for a desperate condition is quite an important sequel, not forgetting that the disease does not recur even after operation. The condition of the patient permitting, any other intra-abdominal pathology should be cleared away. Should the emergency be a life-saving measure, subsequent surgery should be the choice of procedure for taking care of coexisting pathology.

Treatment of Dilated Colon.—To maintain the dilation of the pelvic rectal sphincter effected manually, Fullerton introduces into the rectum a pear-shaped rubber bag, with a diameter of 1 1/2 inches at its broadest part. The bag is then distended with water, and the tube leading from its narrow end is wound spirally round a glass rod laid across the child's buttocks, and fixed in position. The nurse rotates the glass rod at intervals, so as to increase the tension of the rubber tube and thus maintains steady pressure on the constricted portion of bowel. In a case cited the bag was passed spontaneously twenty-four hours after its insertion. The subsequent progress of the case has been extremely gratifying. The treatment is based on the hypothesis that there is achalasia of the pelvic rectal sphincter. It is suggested that this treatment might be tried before grave surgical procedures are resorted to.

ABDOMINAL PAIN.*

By THOMAS J. CRICE, M. D., Louisville.

Possibly no symptom in the whole realm of disease is of greater interest and of wider distribution than that of pain. To the uninitiated it is often considered a mystery, more perhaps from its moral aspect than from its clinical. To those of us who regard it in the light of an indication that Nature is conveying information of considerable physiological and clinical importance in the elucidation of functional and pathological disorders, it becomes a subject of the greatest significance. As a study in itself, pain embraces an accurate knowledge of certain anatomical and physiological facts as well as a comprehensive investigation into the morbid processes of disease. The subject is naturally a very wide one, and in the short time at my disposal I can only deal with it in a restricted way. My remarks, therefore, are to be limited to the discussion of pain as it is manifested in the abdomen.

For us, as physicians and surgeons dealing with the symptoms of disease, the most practical part of all these considerations about the nerve supply of the various parts of the body is that which concerns the ultimate distribution of the spinal nerves; for it is by means of these that we gain a great deal of our clinical information regarding the various seats of disease, and sometimes also the particular nature of the disease. It behooves us, therefore, to remember very accurately the final distribution of every nerve that leaves the brain and spinal cord to end in some part of the body. Take as an example: The Sixth Thoracic Intercostal Nerve. In its course between the sixth and seventh ribs it gives off close to the spine its posterior primary branch, which is distributed to the skin between the lower angles of the scapula; then, about the middle of the intercostal space, from before backward, it gives off its lateral cutaneous branch which ends in the skin of the side of the chest a little below the level of the lower end of the scapula; and, finally, this nerve ends in the sensory organs contained within the skin of the epigastric region at its upper part.

Let us turn our attention to the practical application of the knowledge by which communications take place between the brain and the spinal cord and the various parts of the body, and see how it works out in the diagnosis and treatment of disease. As a first clinical example we may take pain felt in the epigastrium, the side, and the interscapular region in the case of chronic gastric ulcer. The nerve supply of the stomach is, of course, by

*Read before the Jefferson County Medical Society.

means of the two vagi and the sympathetic solar plexus, the latter being intimately connected with the celiac plexus, which in its turn receives branches from the subsidiary plexuses that are directly associated with the stomach. When, then, ulcer of the stomach causes pain to be felt in the parts before mentioned, the lines of communication between the seat of disease and the centers of pain are those that have already been anatomically traced; thus, from the great solar plexus the large splanchnic nerves pass upward to the sixth thoracic sympathetic ganglia, fibres from which pass onward to the cells in the posterior cornua of that segment of the cord which also receives fibres from the sixth thoracic intercostal nerve. Now, inasmuch as these spinal nerves have at their terminals, sensory organs capable of producing the impression of pain, it follows that this pain will be experienced in those parts where these sensitive organs are located; and those in the case of the sixth intercostal nerve will be in the epigastrium, the side of the chest, and between the shoulder blades. Pain thus occurring not at the actual seat of disease, is called a "Referred" pain. Nearly all pains felt in connection with abdominal disease connected with the viscera are of this "Referred" character.

To illustrate this further, let us take some other examples: Those, for instance, connected with the presence of gall stones and those associated with the existence of calculi in the kidney. Here we have two organs closely related anatomically to each other, with many symptoms also much alike, but in which the acute colicky pains are widely different in their seats of distribution. To explain this divergence of two organs so closely related and so similarly affected, we have simply to refer to the anatomical distribution of the nerves respectively associated with each viscus in order to ascertain how the affected viscera cause the symptoms to become manifested in a distant part of the body. In the case of gall stones, the first link in the chain is the hepatic sympathetic plexus. This plexus is, of course, connected with the celiac plexus, itself intimately associated on the one side with the great solar plexus, and on the other side with the phrenic ganglion, which is situated in the diaphragm. It has already been shown in the case of the stomach how the solar plexus by its somatic connections causes pain to be felt in the epigastrium. It is the connection of the hepatic plexus with the phrenic ganglion situated in the diaphragm that explains the right shoulder pain; for this ganglion, through the medium of the phrenic nerve, is brought into relation with the fourth cervical nerve that distributes branches over the shoulder.

Another interesting example of "referred"

pain is that connected with acute appendicitis. In this disease the initial seizure is frequently felt in the umbilical region before the pain settles in the right inguinal region. The sequence of events is not difficult to follow. The inferior mesenteric plexus supplies the ileo-cecal section of the intestinal canal, and therefore the appendix also; but this plexus, through the medium of the aortic plexus, connects with the solar plexus, so that a communication is established with the large splanchnic nerve. This nerve connects, through the corresponding sympathetic ganglion, with the fifth to the ninth or tenth thoracic intercostal nerves, whose final distribution is the epigastric and umbilical regions, where are the sensory end organs that give rise to the feeling of pain. That pain is later felt directly in the right iliac region over the actual seat of disease is probably due to the inflammatory involvement of the parietal peritoneum, which is an extremely sensitive structure, and readily causes pain when over-stimulated by any unnatural agency.

I am anxious now to present the picture in another form. In our practical work we do not begin with a knowledge of the organ diseased and explain the presence of the pain; we do just the reverse. We investigate the nature and situation of the pain, and from these data seek to discover the disease. I am going, therefore, to ask you to examine a specific instance of a patient suffering from pain, say, in the epigastric region, and to seek with me to differentiate its clinical significance. It should be remembered, in the first place, that we are dealing with a "referred" pain, not with pain that is dependent on some local mischief in the abdominal parietes, but with that which is the result of influences transferred from some distant organ or tissue. Our first natural thought connected with pain in this region would be that it might be of gastric origin, but as there may exist no other symptoms suggestive of disease or functional derangement of the stomach, what other causes could give rise to it? I think that if you have followed me in all that I have already indicated regarding the way in which the various nerve influences are conveyed you will readily understand how it is possible for certain sensitive cutaneous areas to be focalizing seats of pain indicative of disease in more than one organ or tissue. This case is very plainly demonstrated in the case of epigastric pain.

SUMMARY OF ABDOMINAL PAIN.

The significance of abdominal pain is quite a large subject for any one to undertake to write upon or enter into discussions of many of its different phases, and there is no other condition in the human anatomy that internists and surgeons are called upon to deal with

and treat as often as some pathological condition in the abdominal cavity. Therefore, if the one symptom abdominal pain exists together with various other clinical symptoms, we should incorporate our laboratory workers, and these conditions studied minutely this effort would no doubt be worthwhile and would increase our diagnostic efficiency; also lower the mortality together with morbidity, and it seems our work would be more inspiring and gratifying even though many of our hardest and most trying cases are thankless jobs.

In abdominal conditions the first subjective symptom is: Pain in the abdomen. The first question which confronts the medical man is a systematic history eliminating the non-essentials, but be sure and go thoroughly into the subjective history. The history of the patient should be written plainly in his own words; his is important not only at the present time but it completes one's records which is so necessary in our work from year to year.

Second, Inspection: This is very important for many reasons; first, the shape, size, irregularities, nodules, masses, waves, etc.

Third, Palpation: This is the most artistic means we have in physical diagnosis. I say it takes an artist to palpate and interpret what he feels and what he hears. We have all seen some men pound the abdomen, thump on a sore eye, punch a swollen mastoid, which was evidence of no skill, and put more more or less fear into the patient. This with muscular guard and human fears, nothing can be learned. So, much time has been lost with more or less dissatisfaction to the patient. This may seem rather an extreme picture in these refined diagnostic days, however, it is astounding to observe the uncultivated methods of palpation. The patient's abdomen should be approached in the most gentle manner and keep in mind the probable character of pathological organ or organs you are palpating and hence, I say, it takes an artist to perform this important job of palpation. It only comes through close observation, application and a keen sense of touch.

DISCUSSION.

George A. Hendon: Looking at this subject purely from a practical surgical standpoint, or I might say a commercial point of view, in a case of abdominal pain the primary objective is to determine whether that pain is due to a lesion or disturbance of the mucous membrane, or whether it is due to a lesion of the serous membrane that lines the abdominal cavity. If it is due to a mucosal lesion there will always be present some form of diarrhea, practically the only exception being gastric ulcer. If diarrhea be not present evacuation of the intestinal contents may be readily produced by the administration of a

purgative, and then it is a medical case, the surgeon is not needed. If there is abdominal pain with absence of diarrhea and difficulty in producing evacuation by the administration of a purgative, there is involvement of the serous membrane lining the abdominal cavity and it becomes a surgical case. As notable exceptions may be mentioned gastric crises of tabes dorsalis and lead colic. In these cases one is just as likely to make a mistake on one side as on the other. For instance, I recently saw a patient who had been given one and a half pounds of epsom salts because he had pain in the abdomen. At operation it was found that he had a perforated duodenal ulcer. The salts had been administered under the impression that the patient was suffering from lead colic because of the symptoms presented. He had a well defined, perforated ulcer of the duodenum with an enormous amount of gastric contents in the abdominal cavity. Pains of this kind will enable one to make an early operation, and early operation of course we know is the primary desideratum, in cases where it is necessary, to conserve the health and life of the individual.

Abdominal pain occurs in renal and ureteral calculi, but in these cases there are guiding factors which will prevent mistakes in diagnosis. In certain systemic affections abdominal pain is sometimes an important symptom.

Another point is that pain connected with the digestive tract, either serous or mucosal in its location, will always be accompanied by nausea and vomiting at some period in the history of the case. One can frequently differentiate between appendicitis and right-sided pyosalpinx by the fact that in pyosalpinx nausea appears late in the history of the disease, whereas in appendicitis nausea and vomiting are early symptoms.

Consideration of the foregoing will enable you to differentiate between lesions of the mucous and serous coats of the intestine in cases of abdominal pain and I believe will prove of considerable advantage.

D. P. Hall: I wish to congratulate Dr. Crice on the excellence of his paper, as it is one of the few read before this society dealing with abdominal pain from the neurological aspect.

It is well to remember that we may have "referred" pain through the terminal branches of the intercostal nerves to the abdomen in the beginning of pneumonia and pleurisy which simulates acute appendicitis very closely and calls for all who are doing surgery to execute their diagnostic acumen to the keenest extent.

It surely requires our touch to be gentle when using the art of palpation on the abdomen, especially on these cases presenting not only "referred" pain from one region to another, but in the highly nervous patient.

French has published a book on diagnosis which traces "referred" pain from a neurologi-

cal standpoint as well as from a symptomatic and objective viewpoint.

Emmet F. Horine: There is one cause for abdominal pain to which I wish to direct attention, namely pain in the upper abdomen due to acute coronary occlusion. Ordinarily the pain in this condition is substernal and radiates in a rather typical way upward into the neck or into the shoulders and arms but it may be localized occasionally in the upper abdomen. The pain is quite constant being very severe, and unless one is alert, an unnecessary abdominal operation may be performed. Of course we know that in acute coronary occlusion the blood-pressure recedes materially. A blood-pressure known to be decidedly elevated previously will recede to within normal limits while normal pressure becomes decidedly sub-normal in acute coronary occlusion. Let us not forget, also, that in acute coronary occlusion a leucocytosis is always present. The reason for this is that from the infarcted area in the heart foreign protein is absorbed.

Thomas J. Crice (in closing): I appreciate the discussion very much. I do not know just what Dr. Hendon meant by the word "commercialism," perhaps I did not understand him correctly. My object in writing the paper was to encourage those interested in abdominal pathology to take more time to study clinical diagnosis before subjecting a patient complaining of abdominal pain to any surgical procedure. I believe if we would carefully study the clinical data which older men in the profession used and not rush our patients to the operating table, we would be more accurate in making our diagnoses.

I do not see why patients cannot be kept in the hospital two or three days for study, especially when they present obscure abdominal symptoms. Of course there are exceptions to this rule. In acute abdominal lesions and emergency cases the proposition is entirely different.

Study of the Action of Calcium on the Heart in Animals.—Frommel studied by means of electrocardiograms the changes in cardiac rhythm in rabbits and frogs after intravenous injection of calcium chloride. The animals presented nodal bradycardia, and disturbed intracardiac conductivity, even complete heart block or arrest of the ventricular systole. The experiments were repeated in rabbits in which the vagus was paralyzed by atropine, or was severed. The effect of calcium chloride on the heart was almost the same in these animals as in the healthy animals. Therefore, the role of the vagus in the action of calcium chloride is insignificant. The conclusion is that calcium may effect the myocardial fibers directly or by the route of the intracardiac ganglions. The property possessed by calcium of enforcing the cardiac contractions, enhancing the excitability of the heart and reducing its conductivity is analogous to that of digitalis.

A TREATMENT FOR FRACTURES OF THE FEMORAL NECK: REPORT OF FIVE CASES.*

By GEORGE A. HENDON, M. D., Louisville.

If we expect to advance the frontiers of science we should not waste time in the discussion of ideas that have been settled, and are beyond the pale of argument. I am therefore introducing a subject that is open to contradiction and dispute. For instance, it is admitted that patients will recover with useful limbs after fractures of the femur if they have been incased in plaster of Paris, that more will recover with greater usefulness if the broken limb has been maintained in the position of abduction. It is also known, and admitted that recoveries will take place if the limb has been kept in extension by various appliances including, Bucks extension, weight and tongs, Thomas splints, Hodgens splints, suspension by means of the Balkan frame, and some even regain the use of a broken leg without any surgical appliance whatever. It might also be cited as a parallel that people have been known to go to California in an ox-wagon and arrive in possession of all their faculties and good health, and live useful lives ever after.

I have always been very deeply impressed by the discomfort and sometimes the pain, and sometimes the actual death that has attended victims of the disaster under consideration which I attributed in great measure to the means adopted to immobilize the fragments of fractured bones. Especially is this true concerning old people. I therefore for a number of years treated my patients with considerable satisfaction in a suspension apparatus that included the Hodgen principle but with a number of extenuating devices. This method while producing satisfactory results imposed a considerable burden and restraint upon the patient. I have also entertained the opinion that if these people could be treated without the weight of apparatus their recovery would be better assured and their comfort materially enhanced.

The open operation for fractures of all kinds has been looked upon with distrust, because of the tradition opposing the conversion of the simple fracture into a compound fracture. This deep-seated aversion grew from the ancient experience which taught that the difference between compound and simple fractures was equivalent to the difference between life and death. The importance of this influence can be understood more clearly when we recall the fact that it was in this particular field of surgery that Lister first employed

*Read before the Jefferson County Medical Society.

his genius in the establishment of the antiseptic treatment of wounds. He was so deeply alarmed by the hazards of compound fractures, and was so assured by the safety of simple fractures, that he was moved to spend his energies in converting the compound fracture into the simple one. And ever since his time surgeons have cherished a secret horror at the thought of reversing the pathological order, and it seems to day to the majority that it is bordering on folly to convert a simple fracture into a compound one. Therefore every device available both to genius and clumsy mediocrity has been employed to secure immobilization and alignment of bony fragments without direct and open approach.

After considerable experience I have reached the conclusion that the propensity of opened fractures toward suppuration is not so much due to the character and nature of the injury as it is to the embarrassment of local nutrition which is caused by splints or other immobilizing apparatus. Such impedimenta seriously impair the nutrition of the limb upon which they are imposed, not only through the restricted circulation but they interfere with all the sources of nutrition trophic as well as circulatory. Therefore, as I see it, there is no more hazard of infection in opening a fracture than there is in opening the abdominal cavity. Since reaching that conclusion it became quite apparent that if some means of approximation and alignment of the fragments of broken bones could be devised without the above mentioned incumbrance a fatal difficulty would be removed.

The idea of using metallic appliances for direct fixation was always more or less revolting on account of the incompatibility between bones and metal, or, in other words, between organic and inorganic substances. This was first brought to my notice by observing the reaction of growing trees to the inset of iron. I have often seen where a railroad spike was driven into a tree to serve as a hitch rack, that the spike caused considerable disturbance in its immediate vicinity and usually became loose on account of the decay of the wood around it. On the other hand, if a wooden peg was driven into the tree very little disturbance resulted and the natural growth of the tree not only increased the security of the peg but would grow out and envelop it.

It is the experience of every surgeon who has used screws, plates, nails and gimlets that degeneration of bone which follows their use causes them to become loose and insecure, even when infection does not take place, so much so that the devices have waned in popularity. They have undoubtedly militated against regeneration of bone by their presence as foreign bodies. They also tend to in-

duce infection. It is a well known fact that physiological law has decreed that like tissues attract and unlike repel. This is well defined in the physical force known as "vital extension." Therefore the effort was made to secure a means of immobilization by employing a substance that is bone itself. For this purpose bone is removed from one portion of the body to serve for repair purposes in the injured region. This process has been called bone grafting, yet in view of the fact that this transferred bone tissue does not act as a graft but as a splint, no special advantage can be expected from its homologous source. It does not continue to grow as grafted skin is supposed to do, but in time becomes absorbed like catgut that is used for ligatures and sutures. Therefore it would be as rational to impose upon the patient the task of supplying his own suture material for closing a wound as it is to make him supply the bone for repairing his fracture. In addition it requires two operations: one consists in obtaining the bone and the other in placing it in the fracture. I have demonstrated by numerous operations that a piece of beef bone which can be sterilized by boiling a half an hour will serve the purpose equally as well and can be employed with a much simpler technique.

This beef bone pin can be placed in the medullary canal of a long bone, dowel pin fashion, and the fragments will remain in contact and recovery will occur without the use of splints, or weights or apparatus of any kind. I have used this in every long bone in the body and have only one poor result that has come to my knowledge. This was in a child four years old who had a fracture of the femur and began walking before the union was firm enough to sustain her weight. The bone bent under the stress of locomotion.

In using the direct fixation method a great deal depends upon the technique of closure of the soft parts. It is my custom never to use any catgut or drains in closing the wound. I use either silver wire or silkworm gut and place the sutures in sufficient proximity and with sufficient depth to accurately approximate the wound margins and control the hemorrhage. The sutures are left in for three weeks.

I beg leave to report five of my cases of fractures of the femoral neck with illustrations to endeavor to make clear the method of employment of the beef bone pin. The first case, that of Mrs. B., who is 79 years old, and suffered a fracture of the neck of the femur produced by a fall. The operation was performed as indicated by the slides. She was able to be out of bed in a wheel chair at the

end of four weeks.

The operation was performed as follows: patient placed upon the table with the affected gluteal region and thigh supported by a sand bag, and incision is made exposing the trochanter of the affected side. Then with the Hudson brace a hole about 6-16 of an inch in diameter bored in at the base of the trochanter through the cortical substance of the bone. A bone peg of corresponding size and four inches long is driven in through the neck until it engages in the cancellous structure of the head. If no more than a half inch of the pin projects beyond the point of entrance it is allowed to remain and the tissue closed in the manner described. No weights, splints, or other immobilizing devices are employed. The wound is dressed and the patient put to bed, and confined until the wounds in the soft tissues have become healed which requires about three weeks. Then he is allowed to get in a wheel chair for another week and allowed to use crutches as soon as he can be taught to use them. You will notice in the case of Mrs. B. that the bone peg was too long. It penetrated the floor of acetabulum from which she suffered no evil consequences.

The next case is that of Mrs. Mc., a lady 79 years old, who suffered a fracture of the hip and was treated the same way who left the hospital on the 18th day after the operation at the earnest insistence of her family. The stitches were removed after her return home by her family physician and she made a complete recovery.

The third case is that of Mr. L., 72 years old, who fractured his hip and was treated according to the manner herein described; he remained in the hospital as a matter of preference and convenience.

The fourth case is that of P. M., boy 17 years old, who sustained a fracture of the femoral neck in a coal mine accident one year previous to the time I saw him. He was treated in plaster of Paris and in various kinds of splints, but union was not secure and he came to me with an united fracture. He was able to get out of bed and walk on crutches four weeks after the operation. The operation was done last October and the last report I had, which was about Christmas time, he had gone back to work.

The fifth case, G. M., 14 years old, and weighed 195 pounds. He stepped down about 12 inches and threw all of his weight on one hip fracturing the neck of the bone. This was done 8 months previous to the time I saw him. He was operated on after the manner described and left the hospital in four weeks, secured firm union and has been well ever since.

DISCUSSION.

John R. Wathen: The subject introduced by Dr. Hendon is too important not to be discussed. During recent years I have personally done very little bone surgery, but am associated with the hospital where Dr. Hendon is doing the work he has described, and it has certainly attracted the interest and attention of his friends and colleagues in that institution. The feature that has impressed and surprised me is the simplicity of the beef-bone-method as performed by Dr. Hendon. No external splint nor plaster is applied, the patient can assume any position desired in bed, and can move around without any discomfort. These are tremendous advantages over the older plans of treating fractures of the hip.

I have witnessed the work of Albee who is one of our most prominent surgeons in this line of work. He takes a small piece of bone from the tibia of the patient and inserts this into the medullary canal, but it does not hold the fragments as firmly as it should. The entire limb has to be immobilized and the patient suffers discomfort in consequence. Murphy employed nails or screws, but they were not always successful in producing proper fixation. We are all familiar with the work of Lane and many of us have seen him operate. His results have been excellent, but in the hands of other surgeons the Lane plate has been more or less unsatisfactory, and many of them have discarded the method entirely. The plan of Royal Whitman has many advantages, but his method is not free from disadvantages. Not long ago Cotton, of Boston, read a paper in Louisville outlining his modern treatment of fractures which differs in some respects from all the other methods mentioned. The fact that so many different methods are in common use is convincing evidence that no one of them has been found entirely satisfactory.

Dr. Hendon has described a very simple method of treating certain types of fractures, one which has proven successful and satisfactory in his hands. The beef bone pegs are kept in the instrument cabinet ready for use when required; they are prepared in different sizes and only a moment is necessary to select the peg suitable for the individual case; the operation is quickly performed, much time being saved over the other methods of procedure; no external dressings are applied, and the patient is returned to bed promptly.

I have had the opportunity of watching Dr. Hendon operate upon several patients in which the bone peg procedure was employed, and have had occasion to observe the post-operative course. In no instance has there been suppuration or any other disquieting complications. As we all know, when too great an amount of plaster of paris or any other type of heavy splint is ap-

plied, there is apt to be interference with the circulation of the limb, nutrition is consequently impaired, the patient suffers pain from pressure on the nerve endings, and in such cases there is always a tendency toward suppuration. After application of the bone peg the limb is not further disturbed, a simple dressing of gauze is used held in place with adhesive strips, there is no pressure, no circulatory disturbance, no interference with nutrition, and no suppuration.

One of the secret's of Dr. Hendon's success is the avoidance of splints, and another feature is that the bone peg produces firmer fixation than can be obtained by nails, screws or the Albee tibial graft. It is impossible to break these bone pegs with the hands, and it is by virtue of their strength and the firm fixation thus produced that permits the avoidance of external fixation apparatus.

Dr. Hendon is a little too modest in his report. His work is excellent and I am sure we all appreciate it.

Frank P. Strickler: I want to congratulate Dr. Hendon on the excellent results he has secured in the treatment of fractures, by means of large beef bone intramedullary pegs applied without the use of splints. I must confess it has been a little difficult for me to adopt the idea of treating fractures in this manner especially when a bone graft of any type has been employed, for all of you I am certain have seen cases where both intramedullary and inlay grafts have fractured while plaster paris splints were being applied and fracture has even occurred after the splints have been worn for several days.

I have always been a strong advocate of the Whitman method of treating fractures of the neck of the femur, but Dr. Hendon's results are certainly as good as any I have ever seen and speak for themselves.

The success of the operation, in my opinion, depends in a large measure upon the size of the bone peg, but perhaps to a greater extent upon the manner in which Dr. Hendon applies it. He does not traumatize the tissues during the operation and leaves no foreign material in the wound, the minimum amount of non-absorbable suture material is used and this is later removed.

I have seen Dr. Hendon perform a number of these operations according to the technique he has described and he has no trouble whatever. The beef bone peg as used by Dr. Hendon is a much simpler operation than the Albee inlay technique and can be done in a shorter period of time.

I know that Dr. Hendon reduces the period of post-operative recovery in these patients to one-half of what it would be under other circumstances. In most of these cases, when the limb

is dressed in plaster paris according to the Whitman method, the patient is compelled to stay in bed for twelve weeks. At the end of five or six weeks Dr. Hendon's patients are walking around the hospital and consequently have very little muscular atrophy. This you know is a very important factor in elderly patients as it reduces the possibility of hypostatic pneumonia to a minimum.

Dr. Hendon is certainly to be congratulated on the excellent work he has done and the results he has achieved.

Frank T. Fort: I regret that I did not hear all of Dr. Hendon's paper. I have had the pleasure of seeing his lantern slides several times, and he is certainly to be congratulated on the results obtained in the cases the pictures of which we have just seen.

In the treatment of fractures I think more depends upon the surgeon, his technique and his ability, than the manner in which he actually performs the work. For example: the work of Lane in bone plating at Guy's Hospital, London, and the results he has secured, cannot be improved upon. The same statement is applicable to the method of using nails as advocated by Murphy. It is true that Murphy occasionally had to remove a nail. He always placed two nails in the hip to secure fixation of the fragments, so in case it became necessary one could be removed without interfering with the ultimate result. To my mind Albee has devised the most perfect mode of dealing with fractures, that is the application of an autogenous graft. However, if the beef bone pegs which Dr. Hendon describes can be sterilized, which undoubtedly they can, and when placed in the medullary canal if they will maintain fixation until the limb becomes strong enough for weight-bearing, which they evidently do, I do not see why they should not replace nails, plates and even autogenous bone grafts.

In the method described by Dr. Hendon there is evidently less trauma to the tissues than by other plans advocated. I did not hear him mention calibration of the peg or the canal, and would like for him to state in closing whether he used the calibrator to determine the size peg to be inserted. I assume from his results that this plan was followed, but cannot help but feel if the peg utilized happened to be too small there would be danger of necrosis from pressure.

O. H. Kelsall: I am very glad to have had the privilege of hearing the report made by Dr. Hendon, which, as usual, he has given us in his admirable and inimitable way. The paper shows that he is an extremely observant student of nature, not only in the human being but also outside of human life.

I have never used beef bone pegs in the treatment of fractures in any situation, but after

hearing Dr. Hendon's report of the excellent results he has obtained, I shall adopt the plan in my future work.

E. S. Allen: I have little to add to the discussion. I am more or less familiar with the excellent work that has been done by Dr. Hendon and he is to be congratulated on the results he has obtained. The bone peg used as he has described assures perfect fixation of the fragments, and as no dressings are applied the comfort of the patient is greatly enhanced. Dr. Hendon has certainly simplified the operation for fractures of the femoral neck. It occurred to me, however, that allowing the patient to walk on the limb at the end of four or five weeks might prejudice union and also weight-bearing might cause unpleasant after effects, such as bowing, etc.

I would like to ask Dr. Hendon whether, if the peg is too long, there may not be some fixation at the hip joint? I congratulate him on the perfection of his technique and the excellence of the results he has secured.

J. Allen Kirk: I appreciate the most excellent report made by Dr. Hendon on the use of the beef bone peg in the treatment of fractures. I have recently employed that method in two cases. One was a fracture of both bones of the forearm of five months standing with non-union. A bone peg was used on the radius and the ulnar fragments accurately approximated. The result was perfect and the function of the arm was thereafter normal. The other case was a fracture of the femur of seven months standing with non-union. The bone peg method was employed and perfect union secured.

In my opinion the bone peg is far superior to any other method in the treatment of suitable fracture cases.

D. Y. Keith: Dr. Hendon says one of the greatest difficulties he has experienced is in getting a pin the proper length, for the pin may be longer than the neck of the femur and go beyond the head into the pelvis, as was shown on one film. In many instances it is impossible to measure accurately the neck of the femur of the injured side, but we feel quite sure with stereoscopic films, or with plain film, the shadow of the neck of the opposite femur could be measured with a great degree of accuracy and a pin the proper length could be selected for use on the injured side before the pin was sterilized and ready for insertion.

The majority of the lantern slides shown were of the so-called introchanteric fractures, or fractures involving the outer portion of the neck carrying a small fragment of the body of the bone with it, which we know, in fractures this far out good results are obtained with extension and sand bags with the patient almost in the erect posture. Firm union and good functional results are usually experienced in this

kind of fracture. We would like to ask him if he has had any cases treated in which there was a typical transverse fracture of the neck of the femur near the central portion of the neck or close to the head of the femur. These are the ones in which complete absorption of the head and neck occurs and the ones in which poor results are seen. We failed to see any case of this type shown on the lantern slides exhibited. Any procedure that will improve the results in transverse fracture of the neck of the femur near its center, or proximal to the center, is a very definite advance. Intertrochanteric fractures are frequently seen with good functional results and firm union.

George A. Hendon (in closing): Answering Dr. Keith's question; Among the slides shown there is one illustrating a transverse fracture of the femoral neck near the head of the bone in which a satisfactory result was obtained. I have treated several others of similar type with equal success.

I am very grateful and appreciate of the commendatory remarks that have been made concerning the matter presented, which I think is so extremely important that it merits our consideration. When we think of the enormous amount of suffering which elderly people with fracture of the femoral neck have to undergo when treated by the older methods of procedure, and compare this with the comfort and freedom from pain attending the plan I have described, the question assumes a degree of magnitude that we cannot afford to overlook.

The beef bone peg can be employed with satisfaction in treating fracture of any long bone of the body. I am not sure that it would be wise or prudent to treat a fracture of the forearm by this method, because that is so simple that splints can be applied and the patient allowed to walk about, it does not confine him to bed. There is one exception to this, however, and that is in cases such as described by Dr. Kirk where there is non-union. In such cases I believe the bone peg should be applied. The bone peg is especially adapted to fracture of the tibia, which entails confinement in bed, and in which as we know non-union is so prone to occur. I have used the method in fracture of the middle third of the humerus which we know is also difficult to control. In fracture just above the trochanter, or the supratrochanteric type, which is so notoriously difficult to control, the bone peg has its greatest field of usefulness.

The question has been raised concerning the introduction of the bone peg into the medullary canal and whether this does not interfere with future nutrition, but I think that is fully answered by the fact that nature closes the medullary canal at the site of fracture regardless of the bone involved. If any broken bone is exposed by incision the medullary canal will be

found closed at the site of the fracture. If nature does that, why should we not do it? So far as I am aware there is no interference with nutrition by virtue of this fact.

There is one point to which I wish to direct especial attention in regard to the introduction of bone pegs into the medullary canal, and this, I think, will answer the question asked by Dr. Zimmerman. Do not place the bone peg equidistant from the line of fracture, that is do not attempt to place as much of the peg in one fragment as the other. If one fragment contains the same length of bone peg as the other, the peg is more likely to break. This may be illustrated by taking an ordinary pencil and hold an equal length of it in either hand, the pencil may be broken in that way with very little exertion; but if the greater portion of it be held in one hand, leaving just enough of the pencil exposed to be grasped by the other hand, it is almost impossible to break it. If one will observe that rule in the introduction of bone pegs into the medullary canal they will not break. I presume Dr. Zimmerman pursued the same plan I did in my earlier work, that is placed just as much of the peg in one fragment as the other. I found by unfortunate experience that was a mistake. The weight of the plaster of paris dressing might have had some influence in breaking the bone peg. That is a possible explanation, provided plaster was used.

There is one difficulty about use of the bone peg that should be mentioned, and that is the fact I have been unable to get a bone peg large enough in diameter to fill and fit tightly in the medullary canal of the femur. To overcome this difficulty one peg is placed in the canal and another driven in alongside of it. As mentioned in the paper, if fracture occurs near the end of the bone where there is cancellous substance, no difficulty is encountered in driving the peg into the cancellous tissue and the fixation is sufficiently firm to hold. It makes no difference if one end of the peg is loose, just so long as the other fragment held firmly in place.

The Water Content of the Vaginal Secretion.

—Bultemann found that the weight in milligrams of the water contained in the vaginal discharge, under various pathologic and physiologic conditions, paralleled the amount of the discharge. On the other hand, the percental water content of the vagina, i. e., the weight of the water compared with the weight of the total secretion, did not stand in any recognizable relation to the amount of the discharge or to the absolute water content of the vagina. The further the vaginal flora differed from the physiologic, the greater was the water content of the secretion.

LACTIC ACID MILK.*

By A. A. SHAPERO, M. D., Louisville.

DEFINITION.

Lactic Acid Milk is whole cows milk artificially soured by inoculation with lactic acid producing organisms, or sterilized milk to which lactic acid has been properly added. The former is sold under various names, Bulgarian milk; fermilac, lactose—locally Von Lae is distributed.

THE DIFFERENCE BETWEEN COW'S MILK AND WOMAN'S MILK.

Of the many salient points concerning the pediatrician, one is the fact that cow's milk is richer in buffer substances than woman's milk. The term buffer confers any substance in a fluid which tends to lessen the change in the hydrogen-ion concentration (or reaction) which otherwise would be produced by adding acids or alkalies. The buffer in milk consists mainly of calcium caseinate and phosphates.

	Caseinogen	Albumin
Human Milk	33%	66%
Cow's Milk	82%	17%

75% of the phosphorus of human milk is held in organic combination while this only occurs to the extent of 25% in cow's milk.

The $P_2 O_5$ Ash component in 100 grains of milk:

Human	32-50 Mgms.
Cow's	160-185 Mgms.

Fresh cows milk has an initial acidity greater than mothers milk, the former represented by a hydrogen-ion concentration ranging from Ph 6.8 to 6.5, while the latter has a Ph of 7.6 to 7.1. Nevertheless, cow's milk can neutralize more acid than woman's milk.

The above shows the marked differences in the casein and phosphorus contents of the two milks. In cows milk this neutralization of the acid is the work of the buffers, one-third of which occurs in the whey and two-thirds in the curd.

The simple experiment of Marriott and Davidson has shown that the addition of 30 cc. of n-10 Hcl to 100 cc. of cows milk results in a comparatively slight change in the H-ion concentration, reducing it from pH of 6.6 to 5.85, while the same quantity of acid added to mothers milk changes its H-ion concentration to a much greater degree from 6.9 to 3.4. In order to bring cows milk to a similar concentration requires over 100 cc. of n-10 Hcl or approximately 3 times as much acid as in the case of breast milk.

Leo in 1888 first showed that cows milk contains more buffers than human milk and

*Read before the Medical Section, Louisville Public Health Nursing Association.

that very considerable amounts of acid could be added to cows milk without causing a great change in its Ph. The buffering property was subsequently studied by Escherich in 1889; by Huebner in 1891; by Muller in 1892; by Aron and by Clark in 1914. Aron was the first to chart the buffer curve of milk in terms of its H-ion concentration. Muller in 1923 plotted curves of the buffer value on the basis of electrometric titrations.

In the process of digestion, the hydrogen-ion concentration of the gastric contents depends therefore on the acid neutralizing power of the food in the stomach. If cows milk is fed to an infant, a great part of the gastric acid unites with the buffers present so that the resulting quantity of free hydrochloric acid left may be too slight or the H-ions too small in concentration to carry on the digesting of proteins in the most efficient manner. The depleted acid may be too small to maintain properly the other important functions depending upon the presence of free acid in the gastric contents, therefore the addition of acid to cows milk before ingestion decreases its buffer effect so that the gastric acid no longer finds any substance or limited amount of substance with which to combine. This results in the acid normally secreted by the gastric cells having the power in producing an optimal condition for gastro-intestinal activity.

The present interest in acidified milk has shown how pediatricians have discarded the idea of adding alkalies to milk. Only a few years ago have many men held the theory that it was necessary to add alkalies in the form of calcium hydroxide or lime water for the successful feeding of infants. The production of a fine curd in the stomach was the sole object in this hypothesis.

HISTORY OF ACID MILKS.

Acid milks have been used for a long time and have been a staple article in many countries for many years. Yogurt is a Bulgarian product; souring of milk with bacillus bulgaricus. Other fermented milks are leben of Egypt; Gioddu of Sicily, dahdi of India and tatte of Scandinavia. Besides these are others which contain small amounts of alcohol. Kumiss is prepared in Central Asia and in the Steppes of Russia by the action of yeast and bacteria on the milk on the camel, mare and ass.

The use of acid milks in infant feeding has been known for a long time, but its merits have been brought forward only in the last few years. Texeria de Mattos states that buttermilk has long been employed in Holland for feeding babies as well as chickens, pigs and calves. Campert in 177 discussed the use of acid milk in infant feeding. In 1865

Ballot again advocated its use. DeJager in 1895 wrote of buttermilk in pediatric practice and DeMattos in 1902 reported a series of cases of infants successfully nourished on buttermilk. During the following years little was written regarding acidified milks except a few papers on Eiweissmilk or protein milk. Although protein milk is buttermilk to which protein is added, the importance of the amount of organic acid, or specifically lactic acid present was never considered.

In 1909, Klotz was probably the first to administer to infants a milk to which lactic acid had been added directly instead of bacterially soured milk. St. Louis offered the impetus for the use of lactic acid milk, Bradley of the city having recommended in 1912 its use routinely for sick as well as healthy infants. However, we are indebted to Marriott for popularizing in this country the use of acidified milk. He fed the latter to more than one-half the number of infants in the Washington University dispensary, so as to determine the biologic efficiency of this milk. His results proved that acid milk yielded more benefits than any other type of artificial food. This type of food is at present used to some extent in the feeding wards of practically all children hospitals.

Thus in the last few years, infant feeding has been placed on a rational basis. Discarding the alkali theory, which was supposed to form a fine curd and also change the reaction of the cows milk, which in reality prevented the coagulation of the milk by rennin. The reduction of the gastric acidity resulting from the ingestion of plain cows milk interferes with peptic digestion, with gastric and intestinal mobility, decreases its bactericidal power and disrupts the acid-base balance. Heldane has shown that alkali unfavorably affects the calcium retention.

THE ACIDITY OF THE GASTRIC CONTENTS OF INFANTS.

Marriott and Davidson have shown the variation in the gastric acidity in normal and pathologic conditions, likewise the influence of the diet on the degree of acidity, and the practical value of the latter in relation to infant feeding. They determined the acidity of the gastric contents at the height of digestion by the number of the H-ions present. The latter is explained as follows: As all acids owe their characteristic properties to the number of free h-ions present, the effective strength of any acid solution may be expressed in terms of the number of grams of ionized hydrogen present. A normal solution contains approximately 1 gram of ionized (H) per liter; a n-10 contains .1 gram ionized hydrogen; while a millionth normal solution contains .000001 gram. To simplify the expres-

and treat as often as some pathological condition in the abdominal cavity. Therefore, if the one symptom abdominal pain exists together with various other clinical symptoms, we should incorporate our laboratory workers, and these conditions studied minutely this effort would no doubt be worthwhile and would increase our diagnostic efficiency; also lower the mortality together with morbidity, and it seems our work would be more inspiring and gratifying even though many of our hardest and most trying cases are thankless jobs.

In abdominal conditions the first subjective symptom is: Pain in the abdomen. The first question which confronts the medical man is a systematic history eliminating the non-essentials, but be sure and go thoroughly into the subjective history. The history of the patient should be written plainly in his own words; his is important not only at the present time but it completes one's records which is so necessary in our work from year to year.

Second, Inspection: This is very important for many reasons; first, the shape, size, irregularities, nodules, masses, waves, etc.

Third, Palpation: This is the most artistic means we have in physical diagnosis. I say it takes an artist to palpate and interpret what he feels and what he hears. We have all seen some men pound the abdomen, thump on a sore eye, punch a swollen mastoid, which was evidence of no skill, and put more more or less fear into the patient. This with muscular guard and human fears, nothing can be learned. So, much time has been lost with more or less dissatisfaction to the patient. This may seem rather an extreme picture in these refined diagnostic days, however, it is astounding to observe the uncultivated methods of palpation. The patient's abdomen should be approached in the most gentle manner and keep in mind the probable character of pathological organ or organs you are palpating and hence, I say, it takes an artist to perform this important job of palpation. It only comes through close observation, application and a keen sense of touch.

DISCUSSION.

George A. Hendon: Looking at this subject purely from a practical surgical standpoint, or I might say a commercial point of view, in a case of abdominal pain the primary objective is to determine whether that pain is due to a lesion or disturbance of the mucous membrane, or whether it is due to a lesion of the serous membrane that lines the abdominal cavity. If it is due to a mucosal lesion there will always be present some form of diarrhea, practically the only exception being gastric ulcer. If diarrhea be not present evacuation of the intestinal contents may be readily produced by the administration of a

purgative, and then it is a medical case, the surgeon is not needed. If there is abdominal pain with absence of diarrhea and difficulty in producing evacuation by the administration of a purgative, there is involvement of the serous membrane lining the abdominal cavity and it becomes a surgical case. As notable exceptions may be mentioned gastric crises of tabes dorsalis and lead colic. In these cases one is just as likely to make a mistake on one side as on the other. For instance, I recently saw a patient who had been given one and a half pounds of epsom salts because he had pain in the abdomen. At operation it was found that he had a perforated duodenal ulcer. The salts had been administered under the impression that the patient was suffering from lead colic because of the symptoms presented. He had a well defined, perforated ulcer of the duodenum with an enormous amount of gastric contents in the abdominal cavity. Pains of this kind will enable one to make an early operation, and early operation of course we know is the primary desideratum, in cases where it is necessary, to conserve the health and life of the individual.

Abdominal pain occurs in renal and ureteral calculi, but in these cases there are guiding factors which will prevent mistakes in diagnosis. In certain systemic affections abdominal pain is sometimes an important symptom.

Another point is that pain connected with the digestive tract, either serous or mucosal in its location, will always be accompanied by nausea and vomiting at some period in the history of the case. One can frequently differentiate between appendicitis and right-sided pyosalpinx by the fact that in pyosalpinx nausea appears late in the history of the disease, whereas in appendicitis nausea and vomiting are early symptoms.

Consideration of the foregoing will enable you to differentiate between lesions of the mucous and serous coats of the intestine in cases of abdominal pain and I believe will prove of considerable advantage.

D. P. Hall: I wish to congratulate Dr. Crice on the excellence of his paper, as it is one of the few read before this society dealing with abdominal pain from the neurological aspect.

It is well to remember that we may have "referred" pain through the terminal branches of the intercostal nerves to the abdomen in the beginning of pneumonia and pleurisy which simulates acute appendicitis very closely and calls for all who are doing surgery to execute their diagnostic acumen to the keenest extent.

It surely requires our touch to be gentle when using the art of palpation on the abdomen, especially on these cases presenting not only "referred" pain from one region to another, but in the highly nervous patient.

French has published a book on diagnosis which traces "referred" pain from a neurologi-

cal standpoint as well as from a symptomatic and objective viewpoint.

Emmet F. Horine: There is one cause for abdominal pain to which I wish to direct attention, namely pain in the upper abdomen due to acute coronary occlusion. Ordinarily the pain in this condition is substernal and radiates in a rather typical way upward into the neck or into the shoulders and arms but it may be localized occasionally in the upper abdomen. The pain is quite constant being very severe, and unless one is alert, an unnecessary abdominal operation may be performed. Of course we know that in acute coronary occlusion the blood-pressure recedes materially. A blood-pressure known to be decidedly elevated previously will recede to within normal limits while normal pressure becomes decidedly sub-normal in acute coronary occlusion. Let us not forget, also, that in acute coronary occlusion a leucocytosis is always present. The reason for this is that from the infarcted area in the heart foreign protein is absorbed.

Thomas J. Crice (in closing): I appreciate the discussion very much. I do not know just what Dr. Hendon meant by the word "commercialism," perhaps I did not understand him correctly. My object in writing the paper was to encourage those interested in abdominal pathology to take more time to study clinical diagnosis before subjecting a patient complaining of abdominal pain to any surgical procedure. I believe if we would carefully study the clinical data which older men in the profession used and not rush our patients to the operating table, we would be more accurate in making our diagnoses.

I do not see why patients cannot be kept in the hospital two or three days for study, especially when they present obscure abdominal symptoms. Of course there are exceptions to this rule. In acute abdominal lesions and emergency cases the proposition is entirely different.

Study of the Action of Calcium on the Heart in Animals.—Frommel studied by means of electrocardiograms the changes in cardiac rhythm in rabbits and frogs after intravenous injection of calcium chloride. The animals presented nodal bradycardia, and disturbed intracardiac conductivity, even complete heart block or arrest of the ventricular systole. The experiments were repeated in rabbits in which the vagus was paralyzed by atropine, or was severed. The effect of calcium chloride on the heart was almost the same in these animals as in the healthy animals. Therefore, the role of the vagus in the action of calcium chloride is insignificant. The conclusion is that calcium may affect the myocardial fibers directly or by the route of the intracardiac ganglions. The property possessed by calcium of enforcing the cardiac contractions, enhancing the excitability of the heart and reducing its conductivity is analogous to that of digitalis.

A TREATMENT FOR FRACTURES OF THE FEMORAL NECK: REPORT OF FIVE CASES.*

By GEORGE A. HENDON, M. D., Louisville.

If we expect to advance the frontiers of science we should not waste time in the discussion of ideas that have been settled, and are beyond the pale of argument. I am therefore introducing a subject that is open to contradiction and dispute. For instance, it is admitted that patients will recover with useful limbs after fractures of the femur if they have been incased in plaster of Paris, that more will recover with greater usefulness if the broken limb has been maintained in the position of abduction. It is also known, and admitted that recoveries will take place if the limb has been kept in extension by various appliances including Bucks extension, weight and tongs, Thomas splints, Hodgens splints, suspension by means of the Balkan frame, and some even regain the use of a broken leg without any surgical appliance whatever. It might also be cited as a parallel that people have been known to go to California in an ox-wagon and arrive in possession of all their faculties and good health, and live useful lives ever after.

I have always been very deeply impressed by the discomfort and sometimes the pain, and sometimes the actual death that has attended victims of the disaster under consideration which I attributed in great measure to the means adopted to immobilize the fragments of fractured bones. Especially is this true concerning old people. I therefore for a number of years treated my patients with considerable satisfaction in a suspension apparatus that included the Hodgen principle but with a number of extenuating devices. This method while producing satisfactory results imposed a considerable burden and restraint upon the patient. I have also entertained the opinion that if these people could be treated without the weight of apparatus their recovery would be better assured and their comfort materially enhanced.

The open operation for fractures of all kinds has been looked upon with distrust, because of the tradition opposing the conversion of the simple fracture into a compound fracture. This deep-seated aversion grew from the ancient experience which taught that the difference between compound and simple fractures was equivalent to the difference between life and death. The importance of this influence can be understood more clearly when we recall the fact that it was in this particular field of surgery that Lister first employed

*Read before the Jefferson County Medical Society.

his genius in the establishment of the antiseptic treatment of wounds. He was so deeply alarmed by the hazards of compound fractures, and was so assured by the safety of simple fractures, that he was moved to spend his energies in converting the compound fracture into the simple one. And ever since his time surgeons have cherished a secret horror at the thought of reversing the pathological order, and it seems to day to the majority that it is bordering on folly to convert a simple fracture into a compound one. Therefore every device available both to genius and clumsy mediocrity has been employed to secure immobilization and alignment of bony fragments without direct and open approach.

After considerable experience I have reached the conclusion that the propensity of opened fractures toward suppuration is not so much due to the character and nature of the injury as it is to the embarrassment of local nutrition which is caused by splints or other immobilizing apparatus. Such impedimenta seriously impair the nutrition of the limb upon which they are imposed, not only through the restricted circulation but they interfere with all the sources of nutrition trophic as well as circulatory. Therefore, as I see it, there is no more hazard of infection in opening a fracture than there is in opening the abdominal cavity. Since reaching that conclusion it became quite apparent that if some means of approximation and alignment of the fragments of broken bones could be devised without the above mentioned incumbrance a fatal difficulty would be removed.

The idea of using metallic appliances for direct fixation was always more or less revolting on account of the incompatibility between bones and metal, or, in other words, between organic and inorganic substances. This was first brought to my notice by observing the reaction of growing trees to the inset of iron. I have often seen where a railroad spike was driven into a tree to serve as a hitch rack, that the spike caused considerable disturbance in its immediate vicinity and usually became loose on account of the decay of the wood around it. On the other hand, if a wooden peg was driven into the tree very little disturbance resulted and the natural growth of the tree not only increased the security of the peg but would grow out and envelop it.

It is the experience of every surgeon who has used screws, plates, nails, and gimlets that degeneration of bone which follows their use causes them to become loose and insecure, even when infection does not take place, so much so that the devices have waned in popularity. They have undoubtedly militated against regeneration of bone by their presence as foreign bodies. They also tend to in-

duce infection. It is a well known fact that physiological law has decreed that like tissues attract and unlike repel. This is well defined in the physical force known as "vital extension." Therefore the effort was made to secure a means of immobilization by employing a substance that is bone itself. For this purpose bone is removed from one portion of the body to serve for repair purposes in the injured region. This process has been called bone grafting, yet in view of the fact that this transferred bone tissue does not act as a graft but as a splint, no special advantage can be expected from its homologous source. It does not continue to grow as grafted skin is supposed to do, but in time becomes absorbed like catgut that is used for ligatures and sutures. Therefore it would be as rational to impose upon the patient the task of supplying his own suture material for closing a wound as it is to make him supply the bone for repairing his fracture. In addition it requires two operations: one consists in obtaining the bone and the other in placing it in the fracture. I have demonstrated by numerous operations that a piece of beef bone which can be sterilized by boiling a half an hour will serve the purpose equally as well and can be employed with a much simpler technique.

This beef bone pin can be placed in the medullary canal of a long bone, dowel pin fashion, and the fragments will remain in contact and recovery will occur without the use of splints, or weights or apparatus of any kind. I have used this in every long bone in the body and have only one poor result that has come to my knowledge. This was in a child four years old who had a fracture of the femur and began walking before the union was firm enough to sustain her weight. The bone bent under the stress of locomotion.

In using the direct fixation method a great deal depends upon the technique of closure of the soft parts. It is my custom never to use any catgut or drains in closing the wound. I use either silver wire or silkworm gut and place the sutures in sufficient proximity and with sufficient depth to accurately approximate the wound margins and control the hemorrhage. The sutures are left in for three weeks.

I beg leave to report five of my cases of fractures of the femoral neck with illustrations to endeavor to make clear the method of employment of the beef bone pin. The first case, that of Mrs. B., who is 79 years old, and suffered a fracture of the neck of the femur produced by a fall. The operation was performed as indicated by the slides. She was able to be out of bed in a wheel chair at the

end of four weeks.

The operation was performed as follows: patient placed upon the table with the affected gluteal region and thigh supported by a sand bag, and incision is made exposing the trochanter of the affected side. Then with the Hudson brace a hole about 6-16 of an inch in diameter bored in at the base of the trochanter through the cortical substance of the bone. A bone peg of corresponding size and four inches long is driven in through the neck until it engages in the cancellous structure of the head. If no more than a half inch of the pin projects beyond the point of entrance it is allowed to remain and the tissue closed in the manner described. No weights, splints, or other immobilizing devices are employed. The wound is dressed and the patient put to bed, and confined until the wounds in the soft tissues have become healed which requires about three weeks. Then he is allowed to get in a wheel chair for another week and allowed to use crutches as soon as he can be taught to use them. You will notice in the case of Mrs. B. that the bone peg was too long. It penetrated the floor of acetabulum from which she suffered no evil consequences.

The next case is that of Mrs. Me., a lady 79 years old, who suffered a fracture of the hip and was treated the same way who left the hospital on the 18th day after the operation at the earnest insistence of her family. The stitches were removed after her return home by her family physician and she made a complete recovery.

The third case is that of Mr. L., 72 years old, who fractured his hip and was treated according to the manner herein described; he remained in the hospital as a matter of preference and convenience.

The fourth case is that of P. M., boy 17 years old, who sustained a fracture of the femoral neck in a coal mine accident one year previous to the time I saw him. He was treated in plaster of Paris and in various kinds of splints, but union was not secure and he came to me with an united fracture. He was able to get out of bed and walk on crutches four weeks after the operation. The operation was done last October and the last report I had, which was about Christmas time, he had gone back to work.

The fifth case, G. M., 14 years old, and weighed 195 pounds. He stepped down about 12 inches and threw all of his weight on one hip fracturing the neck of the bone. This was done 8 months previous to the time I saw him. He was operated on after the manner described and left the hospital in four weeks, secured firm union and has been well ever since.

DISCUSSION.

John R. Wathen: The subject introduced by Dr. Hendon is too important not to be discussed. During recent years I have personally done very little bone surgery, but am associated with the hospital where Dr. Hendon is doing the work he has described, and it has certainly attracted the interest and attention of his friends and colleagues in that institution. The feature that has impressed and surprised me is the simplicity of the beef-bone-method as performed by Dr. Hendon. No external splint nor plaster is applied, the patient can assume any position desired in bed, and can move around without any discomfort. These are tremendous advantages over the older plans of treating fractures of the hip.

I have witnessed the work of Albee who is one of our most prominent surgeons in this line of work. He takes a small piece of bone from the tibia of the patient and inserts this into the medullary canal, but it does not hold the fragments as firmly as it should. The entire limb has to be immobilized and the patient suffers discomfort in consequence. Murphy employed nails or screws, but they were not always successful in producing proper fixation. We are all familiar with the work of Lane and many of us have seen him operate. His results have been excellent, but in the hands of other surgeons the Lane plate has been more or less unsatisfactory, and many of them have discarded the method entirely. The plan of Royal Whitman has many advantages, but his method is not free from disadvantages. Not long ago Cotton, of Boston, read a paper in Louisville outlining his modern treatment of fractures which differs in some respects from all the other methods mentioned. The fact that so many different methods are in common use is convincing evidence that no one of them has been found entirely satisfactory.

Dr. Hendon has described a very simple method of treating certain types of fractures, one which has proven successful and satisfactory in his hands. The beef bone pegs are kept in the instrument cabinet ready for use when required; they are prepared in different sizes and only a moment is necessary to select the peg suitable for the individual case; the operation is quickly performed, much time being saved over the other methods of procedure; no external dressings are applied, and the patient is returned to bed promptly.

I have had the opportunity of watching Dr. Hendon operate upon several patients in which the bone peg procedure was employed, and have had occasion to observe the post-operative course. In no instance has there been suppuration or any other disquieting complications. As we all know, when too great an amount of plaster of paris or any other type of heavy splint is ap-

plied, there is apt to be interference with the circulation of the limb, nutrition is consequently impaired, the patient suffers pain from pressure on the nerve endings, and in such cases there is always a tendency toward suppuration. After application of the bone peg the limb is not further disturbed, a simple dressing of gauze is used held in place with adhesive strips, there is no pressure, no circulatory disturbance, no interference with nutrition, and no suppuration.

One of the secrets of Dr. Hendon's success is the avoidance of splints, and another feature is that the bone peg produces firmer fixation than can be obtained by nails, screws or the Albee tibial graft. It is impossible to break these bone pegs with the hands, and it is by virtue of their strength and the firm fixation thus produced that permits the avoidance of external fixation apparatus.

Dr. Hendon is a little too modest in his report. His work is excellent and I am sure we all appreciate it.

Frank P. Strickler: I want to congratulate Dr. Hendon on the excellent results he has secured in the treatment of fractures, by means of large beef bone intramedullary pegs applied without the use of splints. I must confess it has been a little difficult for me to adopt the idea of treating fractures in this manner especially when a bone graft of any type has been employed, for all of you I am certain have seen cases where both intramedullary and inlay grafts have fractured while plaster paris splints were being applied and fracture has even occurred after the splints have been worn for several days.

I have always been a strong advocate of the Whitman method of treating fractures of the neck of the femur, but Dr. Hendon's results are certainly as good as any I have ever seen and speak for themselves.

The success of the operation, in my opinion, depends in a large measure upon the size of the bone peg, but perhaps to a greater extent upon the manner in which Dr. Hendon applies it. He does not traumatize the tissues during the operation and leaves no foreign material in the wound, the minimum amount of non-absorbable suture material is used and this is later removed.

I have seen Dr. Hendon perform a number of these operations according to the technique he has described and he has no trouble whatever. The beef bone peg as used by Dr. Hendon is a much simpler operation than the Albee inlay technique and can be done in a shorter period of time.

I know that Dr. Hendon reduces the period of post-operative recovery in these patients to one-half of what it would be under other circumstances. In most of these cases, when the limb

is dressed in plaster paris according to the Whitman method, the patient is compelled to stay in bed for twelve weeks. At the end of five or six weeks Dr. Hendon's patients are walking around the hospital and consequently have very little muscular atrophy. This you know is a very important factor in elderly patients as it reduces the possibility of hypostatic pneumonia to a minimum.

Dr. Hendon is certainly to be congratulated on the excellent work he has done and the results he has achieved.

Frank T. Fort: I regret that I did not hear all of Dr. Hendon's paper. I have had the pleasure of seeing his lantern slides several times, and he is certainly to be congratulated on the results obtained in the cases the pictures of which we have just seen.

In the treatment of fractures I think more depends upon the surgeon, his technique and his ability, than the manner in which he actually performs the work. For example: the work of Lane in bone plating at Guy's Hospital, London, and the results he has secured, cannot be improved upon. The same statement is applicable to the method of using nails as advocated by Murphy. It is true that Murphy occasionally had to remove a nail. He always placed two nails in the hip to secure fixation of the fragments, so in case it became necessary one could be removed without interfering with the ultimate result. To my mind Albee has devised the most perfect mode of dealing with fractures, that is the application of an autogenous graft. However, if the beef bone pegs which Dr. Hendon describes can be sterilized, which undoubtedly they can, and when placed in the medullary canal if they will maintain fixation until the limb becomes strong enough for weight-bearing, which they evidently do, I do not see why they should not replace nails, plates and even autogenous bone grafts.

In the method described by Dr. Hendon there is evidently less trauma to the tissues than by other plans advocated. I did not hear him mention calibration of the peg or the canal, and would like for him to state in closing whether he used the calibrator to determine the size peg to be inserted. I assume from his results that this plan was followed, but cannot help but feel if the peg utilized happened to be too small there would be danger of necrosis from pressure.

O. H. Kelsall: I am very glad to have had the privilege of hearing the report made by Dr. Hendon, which, as usual, he has given us in his admirable and inimitable way. The paper shows that he is an extremely observant student of nature, not only in the human being but also outside of human life.

I have never used beef bone pegs in the treatment of fractures in any situation, but after

hearing Dr. Hendon's report of the excellent results he has obtained, I shall adopt the plan in my future work.

E. S. Allen: I have little to add to the discussion. I am more or less familiar with the excellent work that has been done by Dr. Hendon and he is to be congratulated on the results he has obtained. The bone peg used as he has described assures perfect fixation of the fragments, and as no dressings are applied the comfort of the patient is greatly enhanced. Dr. Hendon has certainly simplified the operation for fractures of the femoral neck. It occurred to me, however, that allowing the patient to walk on the limb at the end of four or five weeks might prejudice union and also weight-bearing might cause unpleasant after effects, such as bowing, etc.

I would like to ask Dr. Hendon whether, if the peg is too long, there may not be some fixation at the hip joint? I congratulate him on the perfection of his technique and the excellence of the results he has secured.

J. Allen Kirk: I appreciate the most excellent report made by Dr. Hendon on the use of the beef bone peg in the treatment of fractures. I have recently employed that method in two cases. One was a fracture of both bones of the forearm of five months standing with non-union. A bone peg was used on the radius and the ulnar fragments accurately approximated. The result was perfect and the function of the arm was thereafter normal. The other case was a fracture of the femur of seven months standing with non-union. The bone peg method was employed and perfect union secured.

In my opinion the bone peg is far superior to any other method in the treatment of suitable fracture cases.

D. Y. Keith: Dr. Hendon says one of the greatest difficulties he has experienced is in getting a pin the proper length, for the pin may be longer than the neck of the femur and go beyond the head into the pelvis, as was shown on one film. In many instances it is impossible to measure accurately the neck of the femur of the injured side, but we feel quite sure with stereoscopic films, or with plain film, the shadow of the neck of the opposite femur could be measured with a great degree of accuracy and a pin the proper length could be selected for use on the injured side before the pin was sterilized and ready for insertion.

The majority of the lantern slides shown were of the so-called introchanteric fractures, or fractures involving the outer portion of the neck carrying a small fragment of the body of the bone with it, which we know, in fractures this far out good results are obtained with extension and sand bags with the patient almost in the erect posture. Firm union and good functional results are usually experienced in this

kind of fracture. We would like to ask him if he has had any cases treated in which there was a typical transverse fracture of the neck of the femur near the central portion of the neck or close to the head of the femur. These are the ones in which complete absorption of the head and neck occurs and the ones in which poor results are seen. We failed to see any case of this type shown on the lantern slides exhibited. Any procedure that will improve the results in transverse fracture of the neck of the femur near its center, or proximal to the center, is a very definite advance. Intertrochanteric fractures are frequently seen with good functional results and firm union.

George A. Hendon (in closing): Answering Dr. Keith's question: Among the slides shown there is one illustrating a transverse fracture of the femoral neck near the head of the bone in which a satisfactory result was obtained. I have treated several others of similar type with equal success.

I am very grateful and appreciate of the commendatory remarks that have been made concerning the matter presented, which I think is so extremely important that it merits our consideration. When we think of the enormous amount of suffering which elderly people with fracture of the femoral neck have to undergo when treated by the older methods of procedure, and compare this with the comfort and freedom from pain attending the plan I have described, the question assumes a degree of magnitude that we cannot afford to overlook.

The beef bone peg can be employed with satisfaction in treating fracture of any long bone of the body. I am not sure that it would be wise or prudent to treat a fracture of the forearm by this method, because that is so simple that splints can be applied and the patient allowed to walk about, it does not confine him to bed. There is one exception to this, however, and that is in cases such as described by Dr. Kirk where there is non-union. In such cases I believe the bone peg should be applied. The bone peg is especially adapted to fracture of the tibia, which entails confinement in bed, and in which as we know non-union is so prone to occur. I have used the method in fracture of the middle third of the humerus which we know is also difficult to control. In fracture just above the trochanter, or the supratrochanteric type, which is so notoriously difficult to control, the bone peg has its greatest field of usefulness.

The question has been raised concerning the introduction of the bone peg into the medullary canal and whether this does not interfere with future nutrition, but I think that is fully answered by the fact that nature closes the medullary canal at the site of fracture regardless of the bone involved. If any broken bone is exposed by incision the medullary canal will be

found closed at the site of the fracture. If nature does that, why should we not do it? So far as I am aware there is no interference with nutrition by virtue of this fact.

There is one point to which I wish to direct especial attention in regard to the introduction of bone pegs into the medullary canal, and this, I think, will answer the question asked by Dr. Zimmerman. Do not place the bone peg equidistant from the line of fracture, that is do not attempt to place as much of the peg in one fragment as the other. If one fragment contains the same length of bone peg as the other, the peg is more likely to break. This may be illustrated by taking an ordinary pencil and hold an equal length of it in either hand, the pencil may be broken in that way with very little exertion; but if the greater portion of it be held in one hand, leaving just enough of the pencil exposed to be grasped by the other hand, it is almost impossible to break it. If one will observe that rule in the introduction of bone pegs into the medullary canal they will not break. I presume Dr. Zimmerman pursued the same plan I did in my earlier work, that is placed just as much of the peg in one fragment as the other. I found by unfortunate experience that was a mistake. The weight of the plaster of paris dressing might have had some influence in breaking the bone peg. That is a possible explanation, provided plaster was used.

There is one difficulty about use of the bone peg that should be mentioned, and that is the fact I have been unable to get a bone peg large enough in diameter to fill and fit tightly in the medullary canal of the femur. To overcome this difficulty one peg is placed in the canal and another driven in alongside of it. As mentioned in the paper, if fracture occurs near the end of the bone where there is cancellous substance, no difficulty is encountered in driving the peg into the cancellous tissue and the fixation is sufficiently firm to hold. It makes no difference if one end of the peg is loose, just so long as the other fragment held firmly in place.

The Water Content of the Vaginal Secretion.—Bultemann found that the weight in milligrams of the water contained in the vaginal discharge, under various pathologic and physiologic conditions, paralleled the amount of the discharge. On the other hand, the percental water content of the vagina, i. e., the weight of the water compared with the weight of the total secretion, did not stand in any recognizable relation to the amount of the discharge or to the absolute water content of the vagina. The further the vaginal flora differed from the physiologic, the greater was the water content of the secretion.

LACTIC ACID MILK.*

By A. A. SHAPERO, M. D., Louisville.

DEFINITION.

Lactic Acid Milk is whole cows milk artificially soured by inoculation with lactic acid producing organisms, or sterilized milk to which lactic acid has been properly added. The former is sold under various names, Bulgarian milk; fermilac, lactose—locally Von Lac is distributed.

THE DIFFERENCE BETWEEN COW'S MILK AND WOMAN'S MILK.

Of the many salient points concerning the pediatrician, one is the fact that cow's milk is richer in buffer substances than woman's milk. The term buffer confers any substance in a fluid which tends to lessen the change in the hydrogen-ion concentration (or reaction) which otherwise would be produced by adding acids or alkalies. The buffer in milk consists mainly of calcium caseinate and phosphates.

	Caseinogen	Albumin
Human Milk	33%	66%
Cow's Milk	82%	17%

75% of the phosphorus of human milk is held in organic combination while this only occurs to the extent of 25% in cow's milk.

The $P_2 O_5$ Ash component in 100 grains of milk:

Human	32-50 Mgms.
Cow's	160-185 Mgms.

Fresh cows milk has an initial acidity greater than mothers milk, the former represented by a hydrogen-ion concentration ranging from Ph 6.8 to 6.5, while the latter has a Ph of 7.6 to 7.1. Nevertheless, cow's milk can neutralize more acid than woman's milk.

The above shows the marked differences in the casein and phosphorus contents of the two milks. In cows milk this neutralization of the acid is the work of the buffers, one-third of which occurs in the whey and two-thirds in the curd.

The simple experiment of Marriott and Davidson has shown that the addition of 30 cc. of n-10 Hcl to 100 cc. of cows milk results in a comparatively slight change in the H-ion concentration, reducing it from pH of 6.6 to 5.85, while the same quantity of acid added to mothers milk changes its H-ion concentration to a much greater degree from 6.9 to 3.4. In order to bring cows milk to a similar concentration requires over 100 cc. of n-10 Hcl or approximately 3 times as much acid as in the case of breast milk.

Leo in 1888 first showed that cows milk contains more buffers than human milk and

*Read before the Medical Section, Louisville Public Health Nursing Association.

that very considerable amounts of acid could be added to cows milk without causing a great change in its Ph. The buffering property was subsequently studied by Escherich in 1889; by Huebner in 1891; by Muller in 1892; by Aron and by Clark in 1914. Aron was the first to chart the buffer curve of milk in terms of its H-ion concentration. Muller in 1923 plotted curves of the buffer value on the basis of electrometric titrations.

In the process of digestion, the hydrogen-ion concentration of the gastric contents depends therefore on the acid neutralizing power of the food in the stomach. If cows milk is fed to an infant, a great part of the gastric acid unites with the buffers present so that the resulting quantity of free hydrochloric acid left may be too slight or the H-ions too small in concentration to carry on the digesting of proteins in the most efficient manner. The depleted acid may be too small to maintain properly the other important functions depending upon the presence of free acid in the gastric contents, therefore the addition of acid to cows milk before ingestion decreases its buffer effect so that the gastric acid no longer finds any substance or limited amount of substance with which to combine. This results in the acid normally secreted by the gastric cells having the power in producing an optimal condition for gastro-intestinal activity.

The present interest in acidified milk has shown how pediatricians have discarded the idea of adding alkalis to milk. Only a few years ago have many men held the theory that it was necessary to add alkalis in the form of calcium hydroxide or lime water for the successful feeding of infants. The production of a fine curd in the stomach was the sole object in this hypothesis.

HISTORY OF ACID MILKS.

Acid milks have been used for a long time and have been a staple article in many countries for many years. Yogurt is a Bulgarian product; souring of milk with *bacillus bulgaricus*. Other fermented milks are leben of Egypt; Gioddu of Sicily, dahdi of India and tatte of Scandinavia. Besides these are others which contain small amounts of alcohol. Kumiss is prepared in Central Asia and in the Steppes of Russia by the action of yeast and bacteria on the milk on the camel, mare and ass.

The use of acid milks in infant feeding has been known for a long time, but its merits have been brought forward only in the last few years. Tixeria de Mattos states that buttermilk has long been employed in Holland for feeding babies as well as chickens, pigs and calves. Campert in 177 discussed the use of acid milk in infant feeding. In 1865

Ballot again advocated its use. DeJager in 1895 wrote of buttermilk in pediatric practice and DeMattos in 1902 reported a series of cases of infants successfully nourished on buttermilk. During the following years little was written regarding acidified milks except a few papers on Eiweissmilch or protein milk. Although protein milk is buttermilk to which protein is added, the importance of the amount of organic acid, or specifically lactic acid present was never considered.

In 1909, Klotz was probably the first to administer to infants a milk to which lactic acid had been added directly instead of bacterially soured milk. St. Louis offered the impetus for the use of lactic acid milk, Bradley of the city having recommended in 1912 its use routinely for sick as well as healthy infants. However, we are indebted to Marriott for popularizing in this country the use of acidified milk. He fed the latter to more than one-half the number of infants in the Washington University dispensary, so as to determine the biologic efficiency of this milk. His results proved that acid milk yielded more benefits than any other type of artificial food. This type of food is at present used to some extent in the feeding wards of practically all children hospitals.

Thus in the last few years, infant feeding has been placed on a rational basis. Discarding the alkali theory, which was supposed to form a fine curd and also change the reaction of the cows milk, which in reality prevented the coagulation of the milk by rennin. The reduction of the gastric acidity resulting from the ingestion of plain cows milk interferes with peptic digestion, with gastric and intestinal mobility, decreases its bactericidal power and disrupts the acid-base balance. Heldane has shown that alkali unfavorably affects the calcium retention.

THE ACIDITY OF THE GASTRIC CONTENTS OF INFANTS.

Marriott and Davidson have shown the variation in the gastric acidity in normal and pathologic conditions, likewise the influence of the diet on the degree of acidity, and the practical value of the latter in relation to infant feeding. They determined the acidity of the gastric contents at the height of digestion by the number of the H-ions present. The latter is explained as follows: As all acids owe their characteristic properties to the number of free H-ions present, the effective strength of any acid solution may be expressed in terms of the number of grams of ionized hydrogen present. A normal solution contains approximately 1 gram of ionized (H) per liter; a n-10 contains .1 gram ionized hydrogen; while a millionth normal solution contains .000001 gram. To simplify the expres-

Maternal and Child Welfare literature was sent to many expectant mothers.

One pre-school clinic was held where twenty children received examination, literature and advice from physicians and nurses.

Fancy Farm Unit reports: That they assisted the county nurse in the school examinations. And just recently, under the supervision of Miss Massey and Dr. Campbell, a Clinic for Children of Pre-School age was held. Twenty-one children were examined one day; talks were made to the mothers and literature distributed.

A Child Health Program was observed in May at the schools, and the Priest made a talk on the necessity of observing the health rules, and especially commended this week of observance.

Six dependent families were remembered at Christmas time with presents and some of the substantial things of life.

Three crippled children have been sent to Louisville for treatment.

At all times our women stand ready to lend assistance to promulgate good health projects in school or out of school, anywhere we can render assistance.

The Lowes Unit has rendered assistance to the county nurse whenever called upon and wherever possible. During the year several Clinics for the examination of babies were held at the home of one of the daughters of a physician, Mrs. James R. Lowe.

A number of baskets of good things with Christmas Cheer was sent out to those whom Santa Claus was likely to pass unnoticed.

Two large grass sacks of clothing and a liberal cash contribution was sent to the Flood Sufferers.

The Mayfield Unit co-operates with the Red Cross, Health and Welfare League, takes an active part in the Tuberculosis Seal Sale, serves on a committee of the Woman's Club, renders aid to the Parent Teacher's Association in their school work, assists the Health and Welfare League both in the health and social work.

Committees were appointed over the county to raise funds for the Flood Sufferers.

Child Health Week was generally observed throughout the county.

The Graves County Auxiliary petitioned the Fiscal Court of said county to rescind the act of said court of earlier date to discontinue the services of County Health Nurse of Graves County. We feel sure that the pressure brought to bear by the Auxiliary, caused the Fiscal Court to rescind the act and retain the County Health Nurse. A campaign is on to place Hygeia, the National Health Magazine, in many homes and schools in our county.

The Auxiliary petitioned the Fiscal Court to erect a Tuberculosis Sanitorium in our county

to take care of the many tubercular patients.

Much Medical Historical Data has been secured for our county, and will be published at an early date.

May we not at this time ask all members of the Woman's Auxiliary to join us in extending to our beloved president, Mrs. Lizzie Fuller, our sympathy in her bereavement, in the going home of her husband Dr. George T. Fuller? Through this bereavement the Auxiliary has sustained the loss of its most valued councilor and supporter."

A motion that the Auxiliary express its sympathy with Mrs. Fuller carried and the Secretary was instructed to write Mrs. Fuller a letter.

Harlan County, Mrs. M. L. Quinn, Harlan, Delegate.

The Woman's Auxiliary to the Harlan County Medical Society was organized October 22, 1926, with eleven charter members. Officers as follows:

Mrs. Dorcas Gunn, President.

Mrs. Nellie Riley, First Vice-President.

Mrs. Pearl Nash, Second Vice-President.

Mrs. Bertha Nolan, Secretary.

Mrs. Cathrine Parks, Treasurer.

The first work undertaken was securing advertising for the Auxiliary number of the Kentucky Medical Journal. The amount of \$52.50 was turned over to Mrs. McCormack, and in return she sent us a check for \$11.85 as our commission.

A Hygeia campaign was launched in September with "Mother" M. M. Martin as chairman. Five subscriptions have been secured.

Number of members to date24

Amount disbursed during year...\$26.30

Amount on hand..... 23.32

Number of meetings 6

Jefferson County, Mrs. I. A. Arnold, Louisville, Delegate.

"The Jefferson County Auxiliary is one year old and the newness of the work made it hard to plan. We found the doctor's wives a busy lot of people and many of them seeing no need for this organization. Our aim was to move slowly but surely and try to educate and create an interest and pride in this organization. We decided it would be wiser to plan a few meetings and have them well attended. We had quarterly meetings, two of them strictly business and two luncheon program meetings.

The first luncheon meeting was held at the Brown Hotel. The program was most interesting and educational. "The Why's of a Woman's Auxiliary" was ably presented by Drs. Irvin Abell, A. T. McCormack, Ed. Palmer, and Lillian South. Mrs. Boggess discussed "Mrs. Doctor," and Mrs. Abell, our National Treas-

urer, made an interesting talk about the workings of the National organization. Mrs. A. T. McCormack told us about the Woman's Auxiliary Number of the Kentucky Medical Journal and urged that we try to get advertisements. \$200.04 was secured for our treasury in this way.

As a result of this meeting sixty members were added to our list.

For the Jefferson County Obstetrical Society, we sponsored a public meeting, February 7, with Dr. George Clark Mosher, Kansas City, as speaker at the Public Library.

We adopted a constitution and by-laws and then had a very delightful luncheon at the Brown on May 2nd., with a musical program and an address by Mrs. Stienkamp of Cape Town, South Africa. Quite a few new members were added at this meeting.

At the meeting held September 20th, we had a membership of eighty-seven and three new ones were added, making a total membership of ninety. Our Treasurer reported \$202.50 in the treasury.

Mrs. Hugh Leavell, President.

Mrs. W. F. Boggess, First Vice-President.

Mrs. John D. Trawick, Second Vice-President.

Mrs. Rowan Morrison, Third Vice-President.

Mrs. Wm. White, Fourth Vice-President.

Mrs. D. A. Bates, Secretary.

Mrs. Geo. Leachman, Treasurer.

Mrs. I. A. Arnold, Parliamentarian.

The prospects of the coming year are very bright with ninety members, \$202.50 in the treasury and a most efficient set of officers."

Marshall County, Mrs. L. L. Washburn, Benton, Delegate.

"The most important work of the Woman's Auxiliary, Marshall County Medical Society for the past year was, perhaps, that for the flood sufferers. Although many of our roads were impassable and several of our bridges washed away in Marshall County the need for food, clothes and shelter of families farther south was so great that we devoted our energies to securing quickly as much as possible for them.

The doctors of Hardin and their wives rode all one day and secured \$400.40. \$40.40 of this amount was cash and \$360.00 clothing and supplies.

Doctor A. J. Bean of Brewers secured \$17.00 cash and \$167.00 in clothing. All the materials used in clothing from Brewers was purchased for this use and the women sat up all night to make layettes and other garments.

Doctor Little, Calvert City, contributed \$5.00 cash. His larger donation going into local Red Cross fund, before he had word of the Auxil-

iary work.

Mrs. E. G. Thomas, President, Marshall County Auxiliary, secured in her neighborhood \$8.00 in clothing and supplies and 25 cents in cash.

Doctors Washburn, Henson and Stilley of Benton contributed \$26.00 in cash, and their wives secured \$15.00 worth of clothing and supplies in the name of the Auxiliary. Much had previously gone into the Red Cross quota that was not listed under the Auxiliary amounts.

Listed contributions:

Flood Relief—April 28, 1927.

Cash\$ 88.65

Clothing and supplies 550.00

Total\$638.65

McCracken County, Mrs. J. B. Acres, Paducah, Delegate.

"The Woman's Auxiliary of the McCracken County Medical Society was organized on the evening of March 22, 1927, with a membership of 14.

Three meetings have been held since that time and five new members added to the roll, making a membership of 19.

The Auxiliary is planning to co-operate with the Public Health League during the coming months and is looking forward to a year of active and constructive health work.

The treasurer's report is as follows:

Dues collected to date.....\$19.00

Dues paid State Auxiliary 9.50

Balance on hand.....\$ 9.50

Perry County, Mrs. R. L. Collins, Hazard, Delegate.

"The Woman's Auxiliary to the Perry County Medical Society was organized July 11, 1927, with nineteen charter members, seventeen of whom were wives and two sisters.

The following officers were elected:

Mrs. R. L. Collins, President.

Mrs. J. P. Boggs, First Vice-President.

Mrs. G. P. Wheeler, Second Vice-President.

Mrs. A. M. Gross, Secretary and Treasurer.

Mrs. W. E. Ray, Parliamentarian.

The first program meeting was held at the Elk's Club, August 6, 1927. The following program was rendered:

Instrumental Solo.....Miss Kathryn Ligon

Vocal Solo.....Mrs. Jessie Hobbs

Recitation.....Miss Dorothy Collins

Whistling Solo.....Mrs. G. B. Wheeler

Business.....By-laws were read and adopted

The second meeting was held at the Combs Hotel with a chicken dinner and an enjoyable program was rendered, one number of which

was a talk by a physician. Our programs so far have been popular with a small amount of instruction. Several papers have been read from the December Kentucky Medical Journal, acquainting us with the State and National work.

Our organization being young has not done much work yet. Our object at the present being to get the ladies acquainted with each other and interested in the work. We intend to concentrate on County Sanitation for the next year.

The wives of the members of the Breckinridge County Medical Society met together and we organized the Breckinridge County Auxiliary with seven members. As we had only seven charter members we decided to make each member an officer.

Mrs. S. P. Parks, Irvington, President.

Mrs. J. A. Sandbach, Garfield, First Vice-President.

Mrs. O. E. Ferguson, Cloverport, Second Vice-President.

Mrs. A. W. Kincheloe, Hardinsburg, Third Vice-President.

Mrs. J. E. Matthews, Harned, Fourth Vice-President.

Mrs. John E. Kincheloe, Hardinsburg, Secretary.

Mrs. B. H. Parrish, Cloverport, Treasurer.

We hope to become a working force and to get much information and inspiration from the Owensboro meeting next week."

Verbal reports were made for Daviess and Whitley Counties.

The Secretary read a letter of thanks from the Hon. F. M. Sackett, Chairman of Mountain Flood Relief, for the contribution of twenty-five dollars (\$25.00) sent through the Louisville Board of Trade. This gift of \$25.00 was sent to the Auxiliary by one of its most interested members for Mountain Flood Relief. Unanimously, the members present expressed appreciation of this timely, thoughtful consideration of the anonymous donor.

The President announced that the next procedure of business was the installation of the new President. Miss Mary Palmer escorted Mrs. Wm. M. Martin to the platform. President Stilley said: "Mrs. Martin, it gives me very great pleasure to deliver this gravel to you and to place the affairs of this organization in your capable hands. For you and your new officers I wish the same joy in service that has been our happy lot this past year."

Mrs. Martin responded with the following remarks:

"I greatly appreciate the honor you have conferred on me in choosing me as your President. As you see by the program, I am supposed to make an address. Well, I want to thank you for the compliment of even supposing I could do that which I assure you I cannot. I was reared in the days when children were told they should be seen and not heard. Then I went in training for a nurse where we were taught to say "Yes Doctor" and "No Doctor." And now, if any of you know my husband, Dr. Martin, you can readily understand I do not get much chance for talking. However, I do want to take this opportunity to say a few words.

As you know, Mrs. Stilley has set a very high standard and it is going to take hard work to live up to it. She and Mrs. McCormack have put their shoulders to the wheel and by their team work have done a great work in the last year.

Now, I want to ask the support of every woman here in keeping the good work going. You know we do not always respond as readily as we should when asked to do something. As an example, we each received a letter, or at least one was mailed to us, asking us to send in Medical Historical Data and as you will see by the list only a very few have done so. Suppose we get busy as soon as we reach our homes while it is fresh on our minds and send in at least one article.

Another thing I want to ask of you, when you receive a letter even though it does not seem of very much importance, won't you please answer it promptly even though you only say you received it? I am one of the many who have failed to reply to letters received but I have made a resolution not to be guilty ever again.

Telegrams of regrettable absence were read from Mrs. John O. McReynolds, Dallas, Texas, President, and Mrs. Irvin Abell, Louisville, Treasurer, Woman's Auxiliary, American Medical Association.

Miss Miriam Gaines, Louisville was presented and thrilled her audience with an intimate and detailed introduction of "News Values and the Whys of Newspaper Contacts." Among other things Miss Gaines said, "The editor's valuation differs from that of the press chairman or publicity committee of most organizations in that the newspaper wants straight facts without embellishment for its staff is trained and "what, when, where and who" should be in the main body of the story, then other facts may be added in additional paragraphs. The newspaper edi-

torial rooms want copy in concrete form, legibly written or typed with plenty of space between lines and written on one side of the paper only. All copy should be sent in as early as possible, allowing plenty of time for the work of the editor and printer."

A rising vote of thanks was given Miss Gaines for her instructive and helpful talk.

The Secretary reported the following list of articles already collected in the historical medical data project:

Photograph and Facts given to Dr. A. T. McCormack, secured by Dr. Jos. Martin, Harrison County.

History of Southwestern District secured by Mrs. V. A. Stilley, Marshall County.

Pamphlets, papers, kodak pictures on Trachoma secured by Dr. John McMullen, New Orleans, Louisiana.

Poem "The Family Doctor" secured by Mrs. J. T. Reddick, McCracken County.

Paper "The Passing of the Family Doctor" secured by Mrs. J. T. Reddick, McCracken County.

"Garrard County Physicians of the Past" by Dr. J. B. Kinnaird. Secured by Mrs. J. B. Kinnaird.

Autobiographical Sketch of Dr. J. G. Brooks secured by Mrs. J. T. Reddick, McCracken County.

Vol. 1.—1892 Transaction 87th Meeting Kentucky State Medical Association secured by Mrs. J. O. Jenkins, Campbell County.

Paper—1926 Dr. J. O. Jenkins secured by Mrs. J. O. Jenkins, Campbell County.

The Resolutions Committee reported the following:

"Madam Chairman, your committee on resolutions of courtesy recommend the following:

Whereas, we recognize the fine program so completely carried out by the president, also the gracious welcome from the citizens of Owensboro, therefore, resolved, that the Woman's Auxiliary to the Kentucky State Medical Association tender a vote of thanks for the splendid work done by our most efficient president, Mrs. V. A. Stilley, and Mrs. A. T. McCormack, Secretary-Treasurer and Editor, with her Editorial Staff, on the printing and editing of the most interesting Woman's Number of the Kentucky State Medical Journal.

Resolved, that we extend a vote of thanks to the Woman's Auxiliary of the Daviess County Medical Society for their courtesy and generous hospitality.

Resolved, we express our appreciation for the cordial welcome extended us by the Kentucky Medical Association for the invitation to attend the opening session in a body.

Resolved, we tender a vote of thanks to the

program committee, to all the speakers and to the citizens for their generous hospitality and to the press for the liberal notices of our meeting.

Resolved, that we thank Mrs. Woodard for her unceasing efforts and her successful achievement in membership work.

Respectfully submitted,

Mrs. G. H. Buck,

Mrs. Frank T. Fort,

Mrs. I. A. Arnold, Chairman.

Mrs. J. T. Reddick presented the following resolution and moved its acceptance, which carried:

Resolved that the Auxiliary appropriate funds necessary for printing of the Constitution and By-Laws in pamphlet form and that same be sold at price covering cost and carriage. Furthermore, resolved that the Parliamentarian be appointed chairman of the committee to provide same.

The nominating committee reported as follows:

The nominating committee presents the following names for officers:

President, Mrs. Wm. M. Martin, Harlan.

President-Elect, Mrs. J. T. Reddick, Paducah.

First Vice-President, Mrs. R. E. Griffin, Owensboro.

Second Vice-President—Mrs. Frank T. Fort, Louisville.

Third Vice-President, Mrs. Geo. Buck, Corbin.

Fourth Vice-President—Mrs. A. L. Kincheloe, Owensboro.

Secretary—Mrs. Raymond Evans, Louisville.

Treasurer, Miss Mary E. Palmer, Louisville.

Corresponding Secretary, Mrs. Joe Nolan, Harlan.

Parliamentarian—Mrs. A. T. McCormack, Louisville.

Respectfully submitted:

Mrs. H. M. Meredith,

Mrs. W. F. Bogges,

Mrs. G. S. Brock,

Mrs. R. L. Collins,

Mrs. J. H. Parker.

Mrs. Meredith moved the election of these officers; seconded by Mrs. J. H. Parker. Other nominations were called for from the floor. None were made. Mrs. V. A. Stilley moved that the nominations be closed and that the Secretary cast the ballot. Seconded by Mrs. J. C. Hoover. The Secretary cast a ballot for each of the nominees reported by the committee and they were declared unanimously elected. The President then presented the newly elected officers and Mrs. J. T. Reddick made a gracious acknowledgement.

Jane Teare McCormack,

(Mrs. A. T. McCormack,) Secretary.

REGISTRATION.**Annual Meeting of the Woman's Auxiliary to the
Kentucky State Medical Association.
Owensboro, October 3-4-5-6, 1927.**

Total Registration	59
Executive Board	8
Delegates and Alternates.....	6
Members (Not otherwise listed).....	25
New Members 1927	10
New Members 1928	6
Visitors	4

Total number of Counties represented—17.

Allen	Whitley
Breckinridge	Marion
Daviess	Hopkins
Harlan	Kenton
Jefferson	Bullitt
McCracken	Henderson
Marshall	Laurel
Perry	Lewis
Organized County Auxiliaries represented—9.	Muhlenberg
Allen	Jefferson
Breckinridge	McCracken
Daviess	Marshall
Harlan	Perry
	Whitley

Unorganized Counties represented—8.

Bullitt	Laurel
Henderson	Lewis
Hopkins	Marion
Kenton	Muhlenburg

The registration lists at the Annual Meeting of the Woman's Auxiliary to the Kentucky State Medical Association included the following names:

Allen County.

Mrs. H. M. Meredith, Scottsville.

Breckinridge County.

Mrs. B. H. Parrish, Cloverport.
Mrs. John E. Kincheloe, Hardinsburg.
Mrs. J. A. Sandbach, Garfield.
Mrs. S. P. Parks, Irvington.
Mrs. Wm. Lowry Milner, Union Starr.

Daviess County.

Mrs. R. L. Shroeder, Owensboro.
Mrs. S. P. Oldham, Owensboro.
Mrs. G. L. Barr, Owensboro.
Miss Marian Oldham, Owensboro.
Mrs. Edw. Barr, Owensboro.
Mrs. J. W. Ellis, Owensboro.
Mrs. J. C. Hoover, Owensboro.
Mrs. Mary Armendt, Owensboro.
Miss Mai Armendt, Owensboro.
Mrs. A. L. Kincheloe, Owensboro.
Mrs. W. F. Stirman, Owensboro.
Mrs. O. W. Rash, Owensboro.

Mrs. J. H. Thorpe, Owensboro.
Mrs. H. K. Orsborne, Owensboro.
Miss Orene Orsborne, Owensboro.
Miss Ella Ayer, Owensboro.
Mrs. J. R. McGary, Owensboro.
Mrs. M. H. Walker, Owensboro.
Mrs. R. M. Hathaway, Owensboro.
Mrs. R. E. Morrison, Owensboro.
Mrs. G. E. Shively, Owensboro.
Mrs. J. W. Clarke, Owensboro.

Harlan County.

Mrs. Wm. M. Martin, Harlan.

Jefferson County.

Mrs. Frank T. Fort, Louisville.
Mrs. W. F. Boggess, Louisville.
Mrs. I. A. Arnold, Louisville.
Mrs. A. T. McCormack, Louisville.
Miss Mary Edward Palmer, Louisville.
Mrs. J. S. Lutz, Louisville.
Mrs. J. W. Fitch, Louisville.
Dr. Lillian H. South, Louisville.
Dr. Annie S. Veech, Louisville.
Miss Mayme Sullivan, Louisville.
Mrs. L. D. Mason, Middletown.
Mrs. E. F. Horine.

McCracken County.

Mrs. J. T. Reddick, Paducah.
Mrs. P. H. Stewart, Paducah.

Marshall County.

Mrs. V. A. Stilley, Benton.

Perry County.

Mrs. M. E. Combs, Hazard.
Mrs. R. L. Collins, Hazard.

Whitley County.

Mrs. J. H. Parker, Corbin.
Mrs. G. H. Buck, Corbin.

State at Large.

Mrs. G. G. Thornton, Lebanon, Marion County.
Mrs. I. J. Townes, Madisonville, Hopkins County.
Mrs. A. W. Davis, Madisonville, Hopkins County.
Mrs. T. M. Logan, Covington, Kenton County.
Mrs. W. C. McNeil, Central City, Muhlenburg County.
Mrs. John P. Walton, Central City, Muhlenburg County.
Mrs. E. L. Gates, Greenville, Muhlenburg County.
Mrs. R. N. Holbrook, Shepherdsville, Bullitt County.
Mrs. G. S. Brock, London, Laurel County.
Mrs. H. M. Bertram, Vanceburg, Lewis County.

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COUNTY SOCIETY REPORTS

Carlisle: Carlisle County Medical Society met in regular session at Cunningham, August 29, at 10.A. M. for an all day session, this being one week sooner than usual on account of the secretary leaving before the first Tuesday in September, which is the usual date.

All members present, except Dr. G. W. Payne, who was unable to attend on account of being very busy. Meeting called to order by the president. Invocation by Dr. Hocker. Reading and approval of the minutes of last meeting.

On account of Dr. E. W. Jackson being late, Dr. J. F. Dunn's paper was read and discussed by all. Paper ordered published. Dr. O. L. Galloway, our new health officer, made application for membership, and committee was appointed to examine his credentials. Dr. E. W. Jackson and Dr. T. J. Marshall came in about noon. After lunch Dr. Jackson made a talk on Cancer of Stomach, which was very interesting. Dr. T. J. Marshall made a talk on "Some Digestive Disturbances Among Infants", which was very instructive. His paper was ordered published.

Vote of thanks extended to Dr. and Mrs. Burrow for the nice dinner they served.

H. A. Gilliam, Secretary.

Franklin: The regular monthly meeting of the Franklin County Medical Society was held at the Capital Hotel on July 7, 1927.

The following members were present: Doctors Ginn, Coblin, Budd, Youmans, Patterson, Travis, Minish and C. T. Coleman.

Dr. Travis, the President, presided. The minutes of the regular June 2nd meeting and special meeting on June 27th were read and approved.

A motion was made, seconded and approved that one member of the society would be responsible for a program each month. The membership taking it alphabetically. It was also included in the motion that this society invite as our guest one of our neighboring County Societies each month, taking the counties alphabetically. The Secretary was instructed to begin with Anderson County for August.

Treasurer reported \$55.24 in Treasury.

Clinical Cases: Dr. Patterson reported a complicated obstetrical case in which he was called in consultation. Three doses of pituitrin had been given which, in his opinion, had caused a tonic uterine contraction which prevented doing a podalic version and a caesarean section was done. Much discussion on the use of pituitrin followed this report.

Dr. Ginn also reported an interesting obstetrical case which was discussed by all present.

Adjournment for lunch.

L. T. Minish, Secretary.



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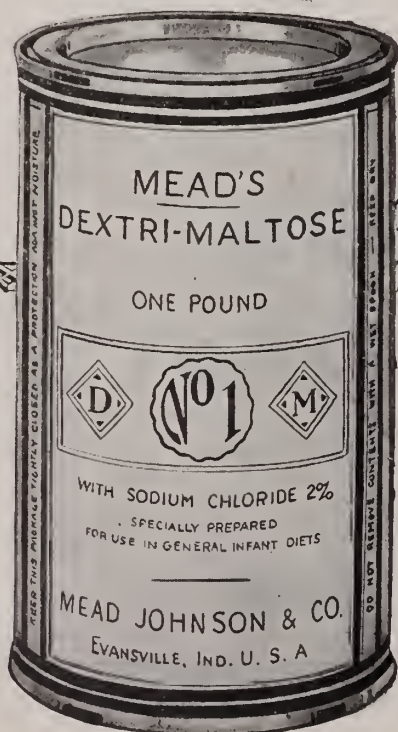
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EDITORIAL

THE CHRISTMAS SEAL SALE.

The Kentucky Tuberculosis Association is putting on its annual Christmas Seal Sale for the purpose of raising the money necessary to carry on the Anti-Tuberculosis Campaign in Kentucky. Dr. J. S. Lock, a former president of the Kentucky State Medical Association, who is known and loved by the physicians and people of the State for his devoted service, is the Executive Secretary of this association and is in charge of the seal sale. Physicians everywhere will earnestly co-operate with Doctor Lock and the local committee in putting this seal sale over big this year.

Diagnostic clinics for tuberculosis have been held in most of the counties of the State under the joint auspices of the Kentucky Tuberculosis Association and the County Medical Society. We are sure no other activity of the profession had done more to establish the public confidence than these clinics. Hundreds of cases of this insidious disease have been recognized and placed under the care of their family physicians which would otherwise have, in all probability, developed into advanced stages of tuberculosis. Doctor Lock's records show hundreds of these cases. While tuberculosis has decreased 60% in Kentucky since 1910, we still have far too much of the disease. The fight against it is financed entirely by the seal sale. Sixty per cent of the income from local sales is retained to help pay for local health activities and the forty per cent pays for the State and International Campaign.

The National Tuberculosis Association has been for years the most effective of the great voluntary agencies in the fight against disease.

If a local committee has not been provided in your neighborhood for seal sale, we hope you will write Doctor Lock at Louisville and secure the details of the method of sale and help him to put it over. If a local committee has already been selected, please get in touch with them in making the campaign this year better than ever before.

THE MAMMOTH CAVE NATIONAL PARK

To the progressive physicians of Kentucky it is unnecessary to say a word in regard to the value of the Mammoth Cave National Park to Kentucky and to the Nation. It is well, however, to briefly consider the matter so we will each have in our minds some of the points that can be made in the campaign to raise the fund which will make the possibility of a National Park a reality. Every reader will add to these suggestions, from his own viewpoint, many others that will be of still greater value.

The Mammoth Cave and Niagara Falls are the best advertised natural wonders in the world. The school books of every nation, in every known language, tell of their attractions. Due to the peculiar tenure of ownership in recent years, the living conditions of no one of our natural wonders have been less attractive. In spite of this, hundreds of thousands of people overcome these artificial barriers because of the intense desire of people everywhere to see the greatest and most beautiful caverns that have been found in the world. Those of us who have had the privilege of visiting the National Parks of the west with their excellent roads, attractive hotels and camp sites, good meals, made available to every taste and purse, realize that the development of this region as a National Park would multiply the number of visitors each year an hundred fold and more. There is no other National Park so accessible to the traveling population of the United States or of the world.

To those of us who are acquainted with the cave region, it is well known that were the cave itself not there the natural beauty of this Green River section would have made of it one of nature's most beautiful playgrounds. No other river in the country has greater scenic beauty, and its most attractive segment would lie within the confines of the proposed park. Natural forests of great trees, hillsides covered with the varied wild flowers of this section, rivulets and swimming holes framed in perpetual verdure—all these combine to make this park a recreation center of the first order. It has become recognized by those in authority that vacations can

be best spent amidst scenes of natural beauty and millions of workers would soon find in this—one of the most beautiful of nature's temples—rest and recreation.

Those who are in the best position to evaluate such a park say that Kentucky and the Nation have no other asset that can be made more remunerative in either a financial or spiritual sense than this great park. The hundreds of thousands of people who would visit it each year would not only spend more or less money during the visit but would carry away from it a sense of nature's restorative in the peace and beauty of it all. En route to the cave and from it visitors would pass the Old Kentucky Home, the Cathedral and other historic spots in Bardstown, the Lincoln Memorial at Hodgenville, the beautiful and historic forts and other places of interest in Bowling Green, the monument of the birthplace of Jefferson Davis at Fairview and would, from one end of the Dixie or Jackson Highway to the other, be rolling on good roads or fine trains through one of the most beautiful sections of our country.

We beseech the interest of the physicians of Kentucky in the movement to raise the fund necessary to make the Mammoth Cave National Park an actual as well as a potential asset to Kentucky and the Nation.

THE STANDARD METHODS OF THE DIVISION OF LABORATORIES OF THE NEW YORK STATE BOARD OF HEALTH

The State Health Departments in the well organized states are doing great work. An outstanding example of this is the publication of the Standard Methods of the Division of Laboratories and Research of the New York State Department of Health, edited by Dr. Augustus B. Wadsworth, the Director, and published by the Williams and Wilkins Company of Baltimore.

No individual in charge of a laboratory can afford to be without this practical work which tells everything in laboratory procedure, that is worth knowing, in a plain practical way and is far and away the best publication of the sort that has come to our attention.

The JOURNAL extends its congratulations to Doctor Wadsworth and his Chief, the distinguished Health Officer of New York State, Doctor Nicoll.

SCIENTIFIC EDITORIAL

TULAREMIA IN KENTUCKY.

Tularemia is a preventable disease, infectious in character, transmitted from rodents to man by the bite of an infected blood-sucking fly or tick, or by contaminating the hands or conjunctival sac with portions of the internal organs or with the body fluids of infected rodents (especially rabbits), flies or ticks. Cases in Kentucky, contracted from handling rabbits, have been reported by Vail¹ and Kavanaugh². Permar and Weil³ reported one case from Pennsylvania who contracted tularemia while handling rabbits shipped from Kentucky. The clinical syndrome is characteristic and is confirmed by obtaining an agglutination of bacterium tularensis by blood serum collected in the second week of illness. This serum should be sent to the Hygienic Laboratories, Washington, D. C., or State Board of Health, Louisville, Ky.

Microscopic examination of coverglass preparations and cultures taken directly from the patient is useless. The organism is terribly infectious and dangerous and for this reason is not ordinarily handled by laboratories.

Tularemia is a reportable disease and should be reported directly to the State Board of Health. In this way knowledge of its geographical prevalence in Kentucky can be ascertained and preventive measures formulated. The economic loss associated with tularemia is great and the disease is a severe one; while there are occasional mild cases, severe toxic prostration of long duration is the rule and convalescence is slow. It is rare for a patient to be at work again at the end of a month; usually the second month is spent lying about the house because of weakness, and during the third month only half-time work is performed. Some have not entirely returned to normal for six months or even a year. Death has occurred in some cases.

Cases reported are from Fayette, Clark, Bourbon, Franklin, Jessamine and Madison Counties. It is believed that tularemia is more prevalent in this state than heretofore reported.

C. N. K.

REFERENCES.

1. Vail, D. T.: *Oph. Rec.* V. 23, 1914, p. 487.
2. Kavanaugh, C. N.: *Ky. Med. Jour.* July 1927.
3. Permar, H. H. & Weil G. C.: *Jour. Path.* V. 2, March 1926.

OFFICIAL ANNOUNCEMENTS

OFFICIAL MINUTES OF THE SEVENTY-SEVENTH ANNUAL GENERAL AND SCIENTIFIC SESSIONS OF THE KENTUCKY STATE MEDICAL ASSOCIATION HELD AT OWENSBORO, OCTOBER 3, 4, 5 and 6, 1927.

TUESDAY, OCTOBER 4—FIRST GENERAL SESSION

The First General Session of the Seventy-seventh Annual Meeting of the Kentucky State Medical Association was called to order at nine-thirty o'clock, Tuesday, October 4, 1927, at the Settle Memorial Church, Owensboro, by President V. A. Stilley, of Benton.

PRESIDENT STILLEY: The Seventy-seventh Annual Session of the Kentucky State Medical Association will come to order. I will ask you to arise and have the invocation by Rev. B. G. Hodge.

REVEREND HODGE: Our Father, we recognize that every good thing comes from Thee, and thank Thee forever for the science of medicine. We thank Thee for Thy revelations to us along the lines of curative and preventive medicine and we pray Thee that Thy blessings of revelation may continue to us.

May these men and women be constantly in Thy care. Bless them individually. Bless their families and bless them, our Father, in their profession. Grant, our Father, that Thy spirit may be with them in this session which we are holding here to the end that Thy kingdom come, Thy will be done on earth as it is in heaven; for we ask these blessings in Jesus' name. Amen.

PRESIDENT STILLEY: Address of Welcome by the Honorable Wilbur K. Miller.

HONORABLE WILBUR K. MILLER: Ladies and Gentlemen of the Kentucky State Medical Association: If the laity may judge at all of those solemn visits and famous household talents to come to us in sickness and cheerfully torture us back to health, I would say that if there be any in this life who have a royal road to success, they have it. It is impossible for us to do without them and the trouble is they know it.

We bravely scout their skill and prowess when we are well and talk wisely of nature's recuperative forces and all that, but when we are ill, or think we are (which is much the same thing) we straightway forget our philosophy, lower our colors ingloriously in the face of the enemy, rush again into the near old bondage and send for the doctor.

There is, within the breast of the South, a most prosaic sentiment akin to reverence, and which is almost a superstition, in favor of the

old family doctor and we imperiously demand his presence and his services upon the slightest provocation. Just what that sentiment is, we do not know. Mental and moral philosophers have not agreed concerning it. It seems to be universal. It certainly is spontaneous in the mind, and clearly it is not the product of any process of reasoning. It defies explanation; it eludes analysis; it passeth understanding. We only know that it exists, and that while it may be latent in health it is dominant in times of trouble.

Ladies and gentlemen, if it were possible to do so, I would not unduly magnify the high and priestly office of the family physician. But in the sharp and perilous crises of life, especially in that dark hour when the home is hushed and loving hearts are waiting to be blessed with hope or broken by despair, his very presence is an inspiration and his words of encouragement come like a benediction. This tender relationship endears him to every hearthstone and virtually incorporates him into every family circle.

I cannot say too much for the learned profession to which you belong. At the most important junctures of human life, and in its most trying and dramatic passages, it comes as the supreme counselor and constitutes the last earthly blessings.

Not only is this true when as an applied science it alleviates the pangs of illness and restores to the glorious aristocracy of health those who are about to languish and to die, but it is likewise true when it comes to the aid of baffled justice in the court room and directs our faltering footsteps into the straight and narrow way. When important questions of life and liberty and property are pressing for solution, and the ordinary means of investigation are confessedly inadequate, when those who are charged with the proper determination of such questions are groping in a veritable labyrinth of doubt and incertitude, anxious to do right but so very liable to do wrong, the physician comes with his skill and learning, with his honorary and scientific tests, with his microscope and the almost miraculous x-ray and lays bare the mystery. In truth, I know of no higher function in civil society than that which is performed by the doctor in the court room. To the innocent he is a saver of life unto life; to the guilty of death unto death.

While for centuries the medical profession was retarded by that persistent conservatism which at once was its weakness and its strength, within the last few decades it has advanced with such tremendous and gigantic strides that it has put to shame the achievements in every other branch of polite learning. To what heights or depths your re-

searches are still to be extended, it would not become us to conjecture; but it does seem, ladies and gentlemen, in these wonderful days of progress that we now enjoy, that the ultimate forces and the reserved treasures of nature are just coming into action and possession and that you, more than all others, are to be the ministers through whom they are to inure to the benefit of mankind.

From the very earliest times the medical profession has exercised a most potent and beneficent influence upon the affairs of men. It has left its mark upon every day and generation. It has not only participated in every conquest in the realm of thought and shared in the peaceful but splendid triumphs of philosophy but, be it said to its everlasting honor, it has been identified with every close and doubtful struggle for human liberty in the days of evil and it has resisted the aggression of arbitrary power in every quarter of the globe and in every period of its history. Its votaries in the past have poured out their blood upon the altars of patriotism, and the downtrodden and the lowly have been aided and blessed by that rich possession. They have sacrificed themselves upon each of the hard-fought fields that mark the stepping-stones of the world's progress, and I speak but the truth of history when I say that they have been in the vanguard of civilization in all its triumphant march from orient to occident.

But better than all this, there has been in your profession unnumbered thousands of patient heroes whose unwritten lives have been devoted to the relief of individual suffering and individual wretchedness and who must forever be unknown except to those who would learn the short and simple annals of the poor.

If the ancient Greeks had their Demosthenes in oratory, their Praxiteles and Phidias in sculpture and thousands of demagogues in war, you have a right to remember, Mr. Chairman, that in your own Hippocrates you had an iconoclast who at Athens and Thessaly and at Delos cast out the sorceries and the incantations with which superstition had blinded the eyes of men for ages and first applied to the healing art the principles of inductive philosophy.

There is no fact in the history of that classic land, there is no legend in her song or story, not a dream realized in her imperishable marble, not a passion caught and held in the immortality of her poems that can deserve to survive the record made by him who is called the father of medicine.

And now, ladies and gentlemen, because such as these have come among us, I feel that I have been commissioned by the good people of this community to bid you something more than welcome, to ask you to enter fully into

all our hearts and all our homes. As I came to perform this pleasant task this morning I remembered that little more than thirty years ago my departed father stood upon your platform and welcomed you to Owensboro, and I have thought it fitting to repeat his words of welcome here this morning and say to you that you are even more welcome today than you were those thirty years ago. And I will say to you, ladies and gentlemen, that we will fall down on our knees and thank the God in heaven for your presence if you should be able to do anything at all to help us lift the horrible hand of epidemic that is resting so heavily on our children.

But be that as it may, it gives me the greatest pleasure to extend to you this morning the hearty greetings of a people who are, and must ever be, the grateful beneficiaries of your labors. (Applause)

PRESIDENT STILLE: Response to the address of welcome, by Dr. Brown. (Applause)

O. W. BROWN, Foster: Mr. President and Members of the Kentucky Medical Association: Rather late yesterday afternoon Dr. McCormack approached a small group of doctors down the street and said, "Dr. Palmer, of Louisville, will not be able to be present to respond to the very able address of Mr. Miller," and he said, putting his hand on one of the doctor's shoulders, "Will you do that?"

He said no and began to make excuses. Then he put his hand on another's shoulders and said, "You can."

"I am not prepared."

He said to me, "How about you Brown?" I began to make excuses the same as the other two or three had and he said, "You won't need to say but a few words," and I finally concluded to attempt a very short response. I understood him to say he would rather I didn't say but a few words. I don't know whether he did or not, but at every one of our Kentucky Medical Association meetings there are always fond remembrances that I carry home with me, and I am sure we all do the same thing. I say now that what I say for myself will be a mouthpiece for the whole of the Kentucky Medical Association.

We all remember the fond occurrences and happenings that take place at all of our conventions. We remember the boat ride at Ashland and also at Newport, especially the one at Newport. We remember the barbecue at Paducah. We remember the big feed in the dairy house at Lexington and we remember last year the different attractions at Frankfort.

This morning we come to Owensboro, my first trip, and I want to say, gentlemen, that at this early date we have not had an opportunity perhaps to know or to understand all

that Owensboro has in store for us. But I want to say that I have been, and am sure all of us, made to feel more than welcome. We find in Owensboro that old southern hospitality that always makes you feel good, and it doesn't make any difference where you go you remember these things. If you enter a stranger's home in Owensboro, and in many other of the southern homes, you at once feel like you are more than welcome. There is a feeling of friendship which you don't get in the northern cities. You all understand and realize that.

This morning, Mr. Miller and members of the Daviess County Medical organization, I assure you that the Kentucky State Medical Association thoroughly appreciates the privilege and the honor at this time of meeting with you and receiving your hospitality in this elegant city of Owensboro, and I feel we are more than thrice welcome and that we will all want to return to this city in the very near future. (Applause)

PRESIDENT STILLEY: I would like to have Dr. Dan Griffith and Dr. Louis Frankesort the incoming President, Dr. Julian Estill, to the chair.

Dr. Griffith and Dr. Frank came forward with President Estill as he took the chair. (Applause)

PRESIDENT STILLEY: Dr. Estill, it is with a great deal of pleasure that I present the gavel, and I feel Kentucky is honored to have a man who has contributed so much to the medicine of Kentucky as you have. It is with a great deal of pleasure that I turn the chair over to you. (Applause)

PRESIDENT ESTILL: I hope I don't look as much out of place in a pulpit as I feel.

President Estill read his prepared address. (Applause)

PRESIDENT ESTILL: We have an honored guest with us this morning, a man who has lived a number of years in the medical profession, a man who began his career back in the times when most of us were not here.

I have great pleasure in presenting to you Dr. Harrison, of Owensboro, who will present our guest.

J. H. HARRISON, Owensboro: Mr. Chairman, Ladies and Gentlemen, Members of the Kentucky Medical Society: Isn't it wonderful to be here this morning? I fear many of you don't appreciate it as much as I do, but I have reason to be proud and I congratulate myself on being here in this great assembly.

It certainly is an honor to have the privilege and the great pleasure of presenting to you this morning two members and two of Daviess County's greatest citizens.

Had I known before this morning that I was going to be privileged to do this, I might

have made it worse than I am going to make it; but no preparation is necessary when you know these two great men as I have known them.

I had the good fortune to have been brought up between these two great Kentucky citizens, Dr. Ellis in the little hamlet of Masonville where he spent a useful life, and Dr. Harris over at Philpot where he spent equally as useful a life. Under this environment I grew up. I am ashamed, gentlemen, to tell you today that under these circumstances I am not a better man; but be that as it may, I feel proud that I had this environment, I feel proud that the spirit of these great men have lingered in my heart and I will make that apology for not having made a better man.

Here are two characters who are outstanding, men who have known and felt the pangs of adversity which is the essential thing in developing good human character. Isn't that so? How often do we wail over our misfortunes. How often do we think that Providence has worked a hardship on us? Let us take what we call our afflictions and our adversities and get a blessing from them. That is what these two great characters have done.

It is useless for me to relate the wonderful service they have given. They are two distinct characters passing out of our existence, and as they pass away we realize that their profiles are soon forgotten and like the little streaks of the morning clouds pass out into the infinite azure of the past. But the good deeds they have done, the mothers' hearts they have soothed in time of trouble, will live on and on and on for all time.

I want to present to you this morning Dr. Harris and Dr. Ellis. (Applause)

S. J. HARRIS, Philpot: Gentlemen of the Kentucky State Medical Society: I wish I could be as eloquent as my friend Harrison was in presenting us old doctors to this Society.

I have met you before, at least I have been in the state medical society before, and I hardly thought I would be able to be here this morning, but my daughter told me she would come and bring me here. My wife trimmed me up as best she could. We live out in the country about eight miles from town and if my appearance doesn't suit you this morning at my age, you can blame my wife for it. (Applause)

L. H. SOUTH: How old are you?

S. J. HARRIS: Other doctors are ashamed to tell their ages, but I am not. I will be eighty-six years old next June. (Applause) I am yet in active practice of medicine; that is, I do all I am called to do. (Laughter and applause) I go night or day. The people come after me in a car at night if they want

me, and they usually get me.

I have practiced medicine in one place, eight miles from this city, for fifty-five years and I am still at that work. Yesterday I dismissed a typhoid fever patient about two and a half miles from my home and immunized a second shot six others in the family, one mother who will soon increase the family; but I hope to keep them all well and save them from having typhoid fever.

I am not so old that I haven't read medicine and kept up as my ability would permit. I take the JOURNAL and I read it. I got the JOURNAL the other day with our President's picture in it, and I went right over to my office and put it up on the wall. (Applause) This morning I recognized him just by that picture. I would have known him if no one had introduced him.

I have been here a long time. Harrison said he was glad that he had lived for this occasion, but if he should be glad I certainly should be too.

When I came to Owensboro I was quite a lad, in my twenty-fourth year, and I never would have been here if I hadn't been a Confederate soldier. I never would have been here if I hadn't been captured in the last charge on the battlefield of Gettysburg and taken to Johnstown, Ohio as a prisoner of war where I stayed for twenty months and eleven days.

A man here in Owensboro, by the name of G. W. Rayle, a lawyer, married an own cousin of mine in Washington County, Kentucky and he got the history of my capture from an old German who said that Lieutenant S. J. Harris of the 38th Virginia Infantry had been taken to Johnstown, Ohio. That good wife of his, and my only cousin, wanted to know if she could do anything for me. Bless her heart, she has gone on before me but she helped me while a prisoner of war and I promised her if I ever got out of prison I would visit her. I did get out of prison finally at the close of the war. Just before the close of the war I was sent home on parole until exchanged and I stayed on father's farm and worked in charge of the negroes. We then had negroes, as you know, but they were soon free. Father had a large farm on Strawberry Creek near Danville, Virginia and I took charge of that and worked on the farm.

After eighteen months I bought a horse and saddle and rode through to Kentucky. I remember coming through Cumberland Gap and the woods were afire that night. I stayed all night at a hotel in the gap, but I came down here and began to go to school to old Henry Hodge, the great old teacher of Owensboro. What education I got I got here in Owensboro. I was graduated from the University of Louisville in 1872 and I am here today.

What I am here today is due to the good people of Owensboro and Daviess County who have helped me along in life; and I have tried to help them to the very best of my ability under God.

I thank you gentlemen for the honor of meeting you. (Applause)

D. M. GRIFFITH, Owensboro: Dr. Harris neglected to tell you that of the 3,000 originally in Pickett's charge he was one out of twenty-nine who came back.

J. W. ELLIS, Owensboro: Mr. President and Gentlemen of the Kentucky State Medical Association: I have none of those beautiful words about me this morning with which one might express his high appreciation of the honor shown, but as I am here before you and my name is mentioned in connection with Dr. Harris, I feel honored. He has been my neighbor for half a century and I have to say this for him: That in all occasions, in season and out of season, he has always obeyed that glorious, old-fashioned rule as laid down by Confucius and quoted by our Saviour when he said, "Do unto another as he would do unto you." (Applause)

I love the doctors and am proud to be associated with them. I have served fifty years in the business and would be at it today but I am not so fortunate as Dr. Harris to be physically fit.

I thank the gentlemen for the honor shown us on this occasion. (Applause)

The thirteenth is my lucky day. It is not with some people, but if I reach the thirteenth of December I will be eighty-one. (Applause)

PRESIDENT ESTILL: I guess it is Dr. McCormack's turn to tell his age next.

SECRETARY McCORMACK: I was born the year these men graduated.

PRESIDENT ESTILL: Dr. Griffin will make his report for the Committee on Arrangements.

R. E. GRIFFIN, Owensboro: This evening at six o'clock at the Owensboro Country Club this convention will be entertained at a dinner. Immediately after that I believe the surgical section of this Association meets.

The Country Club is a short distance from Owensboro. The street cars run within a few squares of it. I expect it will do some of us some good to walk out there. Otherwise, there will be several cars to take people out there if you don't feel like taking the street car or walking the distance across the park.

On Thursday evening the ladies of Daviess County will entertain the ladies at luncheon at the Owensboro Country Club.

As you have heard, we are all glad to have you here as our guests, and if there are any places of interest around the town to which you care to go, we will be glad to show them to you. We have a beautiful town here, nice

streets and plenty of industrial plants.

Some of you might be interested in seeing the construction of the dam here. Those people who live inland might enjoy seeing it. Any time that any of you care to go down there to see this construction, Mr. Wells, the engineer in charge, will take great pleasure in showing you around the place.

There are many points of interest around Owensboro if you care to see them and we will take great pleasure in showing them to you.

Remember this evening at six o'clock the dinner at the Country Club for the guests of the Association. When you register down here with Miss Sullivan, be sure to get your tickets. You will be admitted by ticket, but I have this to say: You won't be charged one dollar for it. It is perfectly free, but give your name and get your tickets from Miss Sullivan.

SECRETARY McCORMACK: I want to mention the bouquet in the center of the church, the Woman's Auxiliary, present at the opening session for the first time in the history of the Association.

I think every man of us has been animated, first, by a mother and then managed by a wife, and it is therefore our particular privilege, and my only regret, that this innovation had not been devised when our dearly beloved friend, Dr. Ellis, was in his prime in the Association. It will always be a matter of regret to me not to have heard him say what ought to have been said about the women of the medical profession because I know no other master of either humanitarian thought or of language who could have expressed so well as that dear, eloquent, beloved old friend, what we all feel when we think of our women. (Applause)

The papers of the Scientific Session on Tuesday morning, October 3 (presided over by President Estill) were: "Feeding the Sick Infant," by J. W. Bruce, of Louisville and discussed by P. F. Barbour, of Louisville, J. H. Pritchett, of Louisville, Dr. Bruce closing the discussion. "Pyelitis in Infancy and Childhood," by Thomas M. Marks, of Lexington. Discussion by J. H. Pritchett, of Louisville, W. F. Boggess, of Louisville, P. F. Barbour, of Louisville, J. W. Bruce, of Louisville, and closing discussion by Dr. Marks. "Tuberculous Meningitis," by T. Cook Smith, of Louisville. Discussed by Morris Flexner, of Louisville, P. F. Barbour, of Louisville, J. W. Scott, of Lexington. Dr. Smith closed the discussion.

At twelve o'clock F. T. Fort, of Louisville gave the Oration in Surgery, on "Epochs in Surgery."

FIRST DAY—AFTERNOON SESSION.

The Scientific Session on Tuesday afternoon convened at two o'clock, President Es-

till presiding. The following essays were presented and discussed: "Poliomyelitis," by W. E. Gardner, of Louisville, discussed by Floyd Allen, of Lexington, L. H. South, of Louisville, Curran Pope, of Louisville, P. F. Barbour, of Louisville, V. E. Simpson, of Louisville, W. B. Owen, of Louisville, A. T. McCormack, of Louisville. Dr. Gardner closed the discussion. "The Significance of the Basal Metabolic Rate," by Walter S. Wyatt, of Lexington; "Early Recognition of Surgical Goiter," by Walter I. Hume, of Louisville; "The Use of Iodine in Goiter," by R. R. Elmore, of Louisville, read by W. F. Boggess, of Louisville. These essays were discussed by: V. E. Simpson, of Louisville, W. A. Jenkins, of Louisville, John R. Wathen, of Louisville, F. G. Aud, of Louisville, E. F. Horine, of Louisville, W. O. Johnson, of Louisville, Louis Frank, of Louisville. Dr. Hume closed the discussion.

SURGICAL SECTION.

The Surgical Section held at the Country Club convened at eight forty-five o'clock, Charles Garr, of Lexington, presiding. The following papers were presented and discussed: "Endometrial Tumors," by W. O. Bullock, of Lexington (illustrated by lantern slides). Discussed by John R. Wathen, of Louisville. Closing discussion by Dr. Bullock. "The Use of Silk in the Restoration of Tendon Function," by W. T. Graham, of Richmond, Virginia (illustrated by lantern slides). No discussion. "The Bleeding Uterus," by J. B. Lukins, of Louisville, discussed by G. A. Hendon, of Louisville, and John R. Wathen, of Louisville. Discussion by Dr. Lukins.

SECOND DAY—MORNING SESSION, OCTOBER 5.

The papers presented at the Scientific Session Wednesday morning, October 5, 1927 (presided over by President Estill) were: "Classification of Heart Disease," by John Harvey, Jr., of Lexington, discussed by J. W. Scott, of Lexington, E. F. Horine, of Louisville, V. E. Simpson, of Louisville, J. Rowan Morrison, of Louisville, F. M. Stites, Jr., of Louisville, W. F. Boggess, of Louisville, H. V. Noland, of Louisville and closed by Dr. Harvey. "Cardiac Arrhythmias," by E. F. Horine, of Louisville, discussed by F. M. Stites, Jr., of Louisville, John Harvey, Jr., of Lexington, V. Blythe, of Paducah, V. E. Simpson, of Louisville, A. Sargent, of Hopkinsville, Dr. Horine closing. "Syphilitic Heart Disease," by J. Rowan Morrison, H. V. Noland and Clyde McNeill, all of Louisville. Discussed by H. V. Noland of Louisville, W. F. Boggess, of Louisville, W. A. Jenkins, of Louisville, A. T. McCormack, of Louisville. Dr. Morrison closed the discussion.

At twelve o'clock V. E. Simpson, of Louis-

ville, gave the Oration in Medicine, on "The Relationship Between the Vagatonic and the Peptic Ulcer Syndromes."

SECOND DAY—AFTERNOON SESSION, OCTOBER 5

The Scientific Session Wednesday afternoon (presided over by President Estill) convened at one-fifty o'clock at which the following essays were presented and discussed: "The Management of the Diabetic in the Home," by W. A. Jenkins, of Louisville, and discussed by J. W. Scott, of Lexington, V. E. Simpson, of Louisville, John Harvey, of Lexington, closed by Dr. Jenkins. "Orthopedic Consideration of the Chronic Arthritides," by John D. Trawick, of Louisville (illustrated by lantern slides). No discussion. "Digitalis Therapy," by R. E. Smith, of Henderson, discussed by C. W. Dowden, of Louisville, S. J. Harris, of Philpot, J. Rowan Morrison, of Louisville, closing discussion by Dr. Smith. "Liver Diet in Pernicious Anemia," by C. N. Kavanaugh, (illustrated by lantern slides) discussed by J. H. Harrison, of Owensboro and closed by Dr. Kavanaugh. "Hyperthyroidism and Myocarditis," by W. O. Johnson, of Louisville, discussed by C. W. Dowden, of Louisville, J. Rowan Morrison, of Louisville, F. G. Aud, of Louisville, Louis Frank, Louisville, C. N. Kavanaugh, of Lexington, Dr. Johnson closing.

EVENING SESSION.

The Public Address on Wednesday evening was delivered by Caroline Hedger, her subject being "Feeding in Relation to Mental and Physical Health."

THIRD DAY—MORNING SESSION—OCTOBER 6.

The Scientific Session Thursday morning, October 6, 1927 convened at nine-thirty o'clock, President Estill, presiding. The following essays were presented and discussed: "Prenatal Supervision in Apparently Normal Pregnancy," by W. T. McConnell, of Louisville. Discussed by Annie Veech, of Louisville, R. C. Burrow, of Cunningham, A. T. McCormack, of Louisville, closing discussion by Dr. McConnell. "A Study of the Results of Prenatal Care versus No Prenatal Care Covering More Than 3,000 Deliveries at Louisville City Hospital." Alice N. Pickett, of Louisville. Discussed by J. T. Reddick, of Paducah, W. T. McConnell, of Louisville, G. G. Thornton of Lebanon, Julian Estill, of Lexington, A. T. McCormack, of Louisville. Closing discussion by Dr. Pickett. "Indications For, and Technique of, Delivery by the Normal Passages" by Walker B. Gossett, of Louisville. Discussion by J. T. Reddick, of Paducah, L. T. Minish, of Frankfort, G. G. Thornton, of Lebanon, S. P. Oldham, of Owensboro, H. S. Heim, of

Beverly and closing discussion by Dr. Gossett.

THIRD DAY—AFTERNOON SESSION OCTOBER 6.

The Thursday afternoon Scientific Session convened at one-thirty o'clock, President Estill presiding. The following papers were presented and discussed: "The Treatment of Peptic Ulcer," by H. T. Rivers, of Paducah, discussed by B. F. Zimmerman, of Louisville. No closing discussion. "The Surgical Treatment of Meningitis with Report of Cases," by R. Glen Spurling, of Louisville. Discussed by W. E. Gardner, of Louisville, Orville Miller, of Louisville, B. F. Zimmerman, of Louisville, A. T. McCormack, of Louisville, Dr. Spurling closing. "The Importance of Cystitis as a Symptom of Surgical Lesions of the Urinary Tract," by S. C. McCoy, of Louisville, (lantern slides).

A. T. McCORMACK, Secretary.

OFFICIAL MINUTES OF THE HOUSE OF DELEGATES OF THE KEN- TUCKY STATE MEDICAL ASSOCIATION OCTOBER 1, 2, 3, 4, 5, 6, 1927.

FIRST SESSION—SATURDAY, OCTOBER 1.

Pursuant to the adjournment of the House of Delegates at Frankfort in 1926, the President, Dr. Irvin Abell, called the meeting to order at the offices of the association, Louisville, at two o'clock Saturday afternoon, October 1, 1927.

Upon motion duly made and seconded, the House adjourned to meet in Owensboro on October 3 at two o'clock.

The meeting convened in the Settle Memorial Church, Owensboro, October 3, 1927 at two o'clock, Secretary McCormack presiding.

SECRETARY McCORMACK: The House of Delegates will come to order.

In the absence of the President, Dr. Abell, he asked me to say to the House of Delegates that he was called to the meeting of the American College of Surgeons, of which he is one of the regents, to a very important meeting of one of the committees on which he is representing Kentucky in public health, nursing education, hospital standardization and other matters.

After consultation we all felt it was of such importance that it was essential Kentucky be represented at Detroit today. For that reason he is there.

In the absence of three Vice-Presidents, it is necessary for us to elect a President of the Association at this time, and I will hear nominations.

D. M. GRIFFITH, Owensboro: I should

like to nominate V. A. Stilley.

R. JULIAN ESTILL, Lexington: I second that nomination.

SECRETARY McCORMACK: You have heard the nomination of Dr. Stilley for President of the Association.

Are there any other nominations?

There being no other nominations, all in favor of Dr. Stilley being made President of the Association say "aye;" opposed. The motion was carried.

SECRETARY McCORMACK: Dr. Griffith and Dr. Shaw will act as a committee to escort Dr. Stilley to the chair and he will deliver his inaugural address. (Applause.) President Stilley took the chair.

PRESIDENT STILLEY: House of Delegates, I thank you very much. I am satisfied that this will be one of the best addresses you have ever heard because it will be one of the shortest.

I am very sorry, indeed, that it wasn't possible for Dr. Abell to be here or any of the three Vice-Presidents, but in the absence of them we will take care of the meeting the best way we can.

I believe the first order of business is the report of the Committee on Credentials of which T. A. Frazer, of Marion, is the chairman.

SECRETARY McCORMACK: Mr. Chairman, I have the roll calls as made up from the report of county secretaries of credentials on file. This has been presented to the committee and the committee presents it to the House of Delegates.

I move that this roll as made in the Secretary's office be the roll call of the House of Delegates for this session and that the credentials herein recorded be recognized as the credentials for the delegates of this session.

FRANK PIRKEY, Louisville: I second the motion; the motion was put to a vote and carried.

PRESIDENT STILLEY: The roll call by the Secretary is next.

Secretary McCormack started to call the roll but was interrupted by Dr. McClure.

W. B. McCLURE, Lexington: Wouldn't it simplify taking the roll in going over from A to Z to have the Secretary just look over the house and mark those present? I think it would save a lot of time.

Secretary McCormack marked the roll as suggested.

SECRETARY McCORMACK: I have here the list of appointments of committees, reference committees, for this session.

Committee on Report of Credentials

T. A. Frazer, Marion, Chairman.

A. D. Willmoth, Louisville.

T. R. Welch, Nicholasville.

Committee on Program

J. W. Scott, Lexington, Chairman.

R. Julian Estill, Lexington.

A. T. McCormack, Louisville.

Medico-Legal Committee

J. B. Lukins, Louisville, Chairman.

W. B. McClure, Lexington.

A. T. McCormack, Louisville.

Committee on Crippled Children

W. Barnett Owen, Louisville, Chairman.

J. D. Trawick, Louisville.

G. B. Brown, Lexington.

Committee on the Journal

A. P. Dowden, Eminence, Chairman.

D. J. Travis, Eddyville.

George Purdy, New Liberty.

Committee on Legislation and Public Instruction

V. A. Stilley, Benton, Chairman.

J. D. Whitaker, Cannel City.

C. C. Garr, Lexington.

J. W. Stovall, Grayson.

O. V. Brown, Island.

Committee on Miscellaneous Business

W. A. Page, Barlow, Chairman.

Frank T. Fort, Louisville.

W. H. Gibson, Lerosé.

Committee on Disaster Relief

Hugh E. Prather, Hickman, Chairman.

Luther Bach, Jackson.

R. M. Hathaway, Owensboro.

Committee on Publicity

W. L. Tyler, Owensboro, Chairman.

I. J. Hoover, Owensboro.

A. McKenney, Owensboro.

Committee on Scientific and Commercial Exhibits

D. M. Griffith, Owensboro, Chairman.

W. M. Martin, Harlan.

W. L. Gambill, Ashland.

Committee on Medical Education

W. A. Jenkins, Louisville, Chairman.

C. A. Calvert, Scottsville.

J. A. Caldwell, Newport.

Committee on Periodic Health Examination

A. M. Leigh, Louisville, Chairman.

E. D. Turner, Cave City.

J. D. Liles, Vanceburg.

Committee on Hospital Standardization

H. G. Reynolds, Paducah, Chairman.

R. Lee Bird, Covington.

J. H. Blackburn, Bowling Green.

Committee on Workmen's Compensation Law

Edward Stumbo, Martin, Chairman.

H. K. Buttermore, Liggett.

Heart Committee

E. F. Horine, Louisville, Chairman.

Austin Bell, Hopkinsville.

J. W. Kincaid, Ashland.
 Walter Byrne, Jr., Russellville.
 John W. Scott, Lexington.
 C. Z. Jackson, Arlington.
 J. R. Morrison, Louisville.
 W. L. Tyler, Owensboro.
 C. Youtsey, Newport.
 Silas Griffin, Henderson.
 Ernest R. Goodloe, Paducah.

Committee on Control of Cancer
 Wallace Frank, Louisville, Chairman.
 J. W. Stephenson, Ashland.
 P. H. Stewart, Paducah.
 H. V. Pennington, London.
 J. G. Gaither, Hopkinsville.

Committee on Public Policy
 Louis Frank, Louisville, Chairman.
 Irvin Abell, Louisville.
 David Barrow, Lexington.
 D. M. Griffith, Owensboro.
 O. F. Hume, Richmond.
 J. W. Stovall, Grayson.
 J. A. Ryan, Covington.
 W. W. Leslie, New Castle.
 S. A. Blackburn, Versailles.
 B. F. Reynolds, Carlisle.

Committee on Health Problems in Education
 W. E. Gary, Hopkinsville, Chairman.
 W. B. Moore, Cynthiana.

Committee on County Hospitals
 C. C. Howard, Glasgow, Chairman.
 O. F. Hume, Richmond.
 H. H. Hunt, Mayfield.

Committee on Medical Ethics
 J. W. Scott, Lexington, Chairman.
 B. S. Rutherford, Bowling Green.
 J. T. Price, Harrodsburg.

Auditing Committee
 Frank Pirkey, Lexington, Chairman.
 F. G. Speidel, Louisville.
 C. C. Carroll, White Mills.

Committee on Report of Council
 G. S. Brock, London, Chairman.
 J. B. Kinnaird, Lancaster.
 A. M. Gross, Hazard.

Committee on Prevention of Goitre
 R. R. Elmore, Louisville, Chairman.
 C. A. Vance, Lexington.
 L. Wallace Frank, Louisville.
 E. W. Jackson, Paducah.
 P. C. Sanders, Danville.

Committee on Military Medicine
 J. G. Sherrill, Louisville, Chairman.
 J. A. Ryan, Covington.
 L. H. Winans, Ashland.

Committee on Constitution and By-Laws
 R. C. McChord, Lebanon, Chairman.
 S. B. Marks, Lexington.
 D. E. McClure, Elizabethtown.

Committee on Resolutions.
 W. A. Quinn, Henderson, Chairman.
 M. M. Phillips, Crab Orchard.

Committee on Arrangements
 R. E. Griffin, Owensboro, Chairman.

J. W. Barnhill, Owensboro.
 J. E. Barnhill, Owensboro.
 Edward Barr, Owensboro.
 G. L. Barr, Owensboro.
 Park L. Berkshire, Lewisport.
 J. W. Clarke, Owensboro.
 John M. Clayton, West Louisville.
 Irving L. Denton, Fordsville.
 George W. Duvall, Chicago, Ill.
 O. W. Edge, Owensboro.
 J. W. Field, Owensboro.
 J. N. Fireline, Owensboro.
 Parvin D. Gillin, Owensboro.
 A. J. Gordon, Utica.
 F. M. Griffin, Hawesville.
 D. M. Griffith, Owensboro.
 Samuel J. Harrison, Owensboro.
 G. A. Hardwick, Utica.
 Robert M. Hathaway.
 C. M. Heavrin, Hawesville.
 John C. Hoover, Owensboro.
 I. J. Hoover, Owensboro.
 A. L. Kincheloe, Owensboro.
 A. Kirk, Philpot.

J. R. McGary, Owensboro.
 A. McKinney, Owensboro.
 W. B. Negley, Owensboro.
 John A. Nelson, Owensboro.
 S. P. Oldham, Owensboro.
 H. K. Osburn, Owensboro.
 J. E. Payne, West Louisville.
 O. W. Rash, Owensboro.
 C. M. Rice, Owensboro.
 Ralph L. Schroeder, Owensboro.
 Francis M. Sherman, Owensboro.
 J. D. Sherman, Owensboro.
 J. D. Stewart, Rome.
 James H. Thorpe, Owensboro.
 V. H. Walker, Owensboro.
 Mallory L. Smith, Maceo.
 Wilbur F. Stirman, Owensboro.
 William Lee Tyler, Owensboro.

PRESIDENT STILLEY: The minutes of the 1926 meeting.

W. B. McCLURE, Lexington: I move the reading of the minutes be suspended as the minutes have been published in the JOURNAL.

D. M. GRIFFITH, Owensboro: I second the motion. The motion was put to a vote and carried.

PRESIDENT STILLEY: Report on the program, J. W. Scott.

R. JULIAN ESTILL: Dr. Scott is not present. I wish particularly to say in his absence that I believe if you will look over the program he has arranged for us you will find it is one of the most interesting you have seen for any society meeting.

I am sure when we get through with the program we will feel we do owe a debt of

gratitude to Dr. Scott for his program.

SECRETARY McCORMACK: As a member of the committee, I want to suggest one amendment to the program. On account of the tremendous importance of the subject of poliomyelitis I want to suggest that there be added to the program tomorrow afternoon a twenty minute discussion of the epidemiology of poliomyelitis in Kentucky by Dr. Floyd S. Allen of Lexington who has been down here making a study of this situation, as he has already done in eastern Kentucky. He will take his place on the program and this will give him an abundance of time.

With this amendment, I move the scientific program be adopted the program of the 1927 session.

J. A. ORR, Paris: I second the motion.

The motion was put to a vote and carried.

PRESIDENT STILLEY: Report of Committee on Arrangements, Robert E. Griffin, Owensboro.

SECRETARY McCORMACK: I move it be passed until Dr. Griffin comes in.

PRESIDENT STILLEY: Report of the Council.

Secretary McCormack read the report of the Council.

W. B. McCLURE, Lexington: It should be clearly understood by the profession that the Association pays the attorney's fees, but also according to the By-laws, they furnish court costs as well.

SECRETARY McCORMACK: The intention of the sentence, I feel sure, doesn't go to that. It is only for the defense of unjust malpractice suits. That is where the emphasis is.

PRESIDENT STILLEY: You have heard the report of the Council. What shall be done with it?

It is referred to the Committee on the Report of Council.

SECRETARY McCORMACK: At this time I would like to suggest that at last year's session the matter of making some arrangement by which we could get a group insurance policy or group rates for insurance, liability and insurance, against malpractice suits and against automobile accidents was taken up.

Automobile liability was discussed at considerable length and referred to the Council with instructions to investigate the matter and either act or report at his meeting.

The Council has had the matter under consideration at various times during the year, and at this session Major Byars of Louisville, representing two of the largest companies that write this class of business, is present. The Council determined that it would be best for Major Byars to come before this body and present the matter so that all of you could un-

derstand it and could either take action or determine what should be done in the matter.

With this idea in view, and representing the Council, I will ask the unanimous consent that Major Byars be given the privilege of the floor and be permitted to present his proposition to the House of Delegates.

PRESIDENT STILLEY: What is the pleasure of the House of Delegates?

Consent was unanimously given.

MAJOR DAVID O. BYARS, Louisville: This is a letter I addressed to the Secretary of your Association from our firm of Carpenter & Burba, Louisville:

"We desire to submit to your Association the following proposition on doctors and physicians liability in this state.

"There are two first-class companies that write this insurance on a group basis, Hartford Accident & Indemnity Company and the New Amsterdam Casualty Company. We have the agency for both companies and are submitting the rates of our New Amsterdam Company's policy and giving the salient features of same.

"New Amsterdam Casualty Company.

5000-15000 \$18.75

10000-30000 \$28.13

15000-45000 \$32.81

Higher limits can be had.

"Our firm has general state agency.

"Mr. Fred Forcht is and has been general attorney for years.

"No suit settled without written consent of assured.

"No charge for nurses and non-professional attendants.

"There is an additional charge for x-ray for diagnosis.

"Professional assistants, one-half charge.

"Fleet automobile policy permitted.

"Our company has offices, representatives and attorneys throughout the state. In case of suit or threatened suit, assured will report case with information and Mr. Forcht's office will handle same. In addition to damages, company pays all expenses incurred for investigation, negotiation or defense; all costs taxed against the assured in any legal proceeding defended by the company, and all interest accruing after entry of judgment upon such part thereof as shall not be in excess of the company's limit of indemnity as expressed in policy costs are paid in addition to amount of limits expressed in the policy.

"In view of above, if our policy is accepted, it will not be necessary for your Association to pay attorney to defend cases of those who carry our policy. In addition to this saving you have the advantage of local representatives and attorneys which will give prompt and thorough attention, such as only a

permanent and state-wide organization can give; also the saving on your fleet automobile policy which will more than offset the difference between our rates and the rates of the company that now carries a large amount of your liability insurance. As the result of one of the above groups I understand that the Medical Protective Association has withdrawn from Tennessee.

"If approved by your Association we will forward each member a circular on the group and fleet policies and call if interested, or any method you may decide that is most convenient to members.

"Our company appreciates that many doctors in the rural districts do not carry liability insurance, hence our expected percentage would take this fact into consideration. If approved there would be no obligation on any member taking either policy unless he so desired.

"In conclusion permit me to assure that no doctor is eligible for our proposition unless a member of a medical society in good standing. Appreciate the consideration given us and if we are authorized to write this business assure you of prompt and efficient service at all times."

"FLEET AUTOMOBILE POLICY PROPOSED FOR MEMBERS OF THE KENTUCKY MEDICAL ASSOCIATION.

"All automobiles are divided into three classes for public liability and property damage. The following is computed for the Louisville territory, with limits of \$5000 and \$10,000 for public liability and \$1000 for property damage. If higher liability limits are desired as \$10,000 and \$20,000, add twenty per cent before deducting the fifteen per cent:

	P. Liab. & Prop. Dmg.	P. Liab. & Prop. Dg.	P. Liab. & Prop. Dg.
Others	\$23-\$11	\$29-\$13	\$36-\$16
Ours	20- 11	26- 13	32- 16
Initial Saving ...	\$ 3	\$ 3	\$ 4
	\$31	\$39	\$48
	15%	15%	15%
	\$ 4.65	\$ 5.85	\$ 7.20
Initial Saving ...	\$ 3	\$ 3	\$ 4
Total Saving	\$ 7.65	\$ 8.85	\$11.20

"Assuming that 1000 memers of your Association take the above and average one car of the third group, the saving to members will be 1000x\$11.20, or \$11,200.

"Considering the two policies together on physicians liability, being \$28.13 for \$10,000 and \$30,000 coverage, less saving on one automobile of \$11.20 is \$16.93 as compared to

\$21 which the Medical Protective Association charges; in addition to which you have additional advantages mentioned in paragraph No. 4 of our letter."

A. D. WILLMOTH, Louisville: What percentage do you require of the composite group?

MAJOR BYARS: I don't believe they require any number the first year. Probably our first year's work will be the determining factor.

A. D. WILLMOTH: What do you think it would be?

MAJOR BYARS: I am guessing solely, but twenty-five to sixty-five per cent.

I will leave with you, if you care to have me, a copy of this policy; also the letter. I will be glad to answer any questions.

D. M. GRIFFITH, Owensboro: That estimate of sixteen dollars is based on automobile insurance?

MAJOR BYARS: That is the group liability policy with the saving on your automobile policy taken therefrom.

D. M. GRIFFITH: What would be the liability?

MAJOR BYARS: Of course we all like our own.

D. M. GRIFFITH: What would be the comparison in dollars?

MAJOR BYARS: If you don't take the automobile policy our cost for \$10,000 and \$30,000 is \$28.13 and your cost now for \$10,000 and \$25,000 is \$21.

D. M. GRIFFITH: Would it be higher if you didn't take the automobile policy?

MAJOR BYARS: Of course we give you \$5,000 more coverage.

J. A. ORR, Paris: Would the Medical Protective Association be more than that?

MAJOR BYARS: I believe Dr. McCormack can answer that better than I. Ten to twenty-five thousand is \$21. As a matter of fact, I saw Dr. Owen's policy the other day, \$1000 to \$25,000 for the total, \$21.

J. A. ORR: May I ask what the rate of that automobile covering is. Is that just liability?

MAJOR BYARS: Liability and property damage.

J. A. ORR: Doesn't it cover fire and theft?

MAJOR BYARS: You are not permitted to write that under a reduced rate.

FRANK T. FORT, Louisville: Is that anything like the Virginia Mutual?

MAJOR BYARS: This is not a mutual company.

FRANK T. FORT: In this protection against malpractice suits, couldn't that act as a boomerang? Wouldn't it allow the opposing counsel to ask, "Haven't you got group insurance," and bring that out before the

court and before the jury and make it a little bit less effective?

MAJOR BYARS: You understand we are not going to issue your group policies to keep away from the competition. There are no obligations on any of you. Of course we will give your Association a contract if you accept it as to what prices we will charge, which are these in this letter, but that is all.

J. A. ORR: May I ask what that rate on liability would be for the Buick automobile?

MAJOR BYARS: Twenty-nine dollars and thirteen cents for \$5,000 and \$10,000, and \$1,000 property damage. That is a standard Buick, I believe. The largest one comes under the 36-16 class.

J. A. ORR: Did you say the rate is twenty-nine now?

MAJOR BYARS: Twenty-nine now for liability on \$5,000 and \$10,000 coverage, and thirteen dollars for \$1,000 property damage. With our fleet policy you get \$8.85. That is the smallest Buick. The large one is \$36.13.

J. A. ORR: Are you sure that is correct?

MAJOR BYARS: I can look at my manual and tell you. It is less out of Louisville.

J. A. ORR: On the group plan does that effect the people out in the state?

MAJOR BYARS: You would have a corresponding saving.

J. A. ORR: You don't know how much that will be?

MAJOR BYARS: I can look it up very quickly.

D. M. GRIFFITH: It is up to us to adopt it officially?

MAJOR BYARS: We would like to have you adopt it officially if it meets your approval.

SECRETARY McCORMACK: I have thought of this thing now for six years. We have discussed it for six years from every possible angle and I suppose there is but one way for us to do, being doctors, and that is to pay the bill at the higher cost that there isn't any necessity for doing to get this protection.

Adequate indemnity for malpractice insurance would cost us three dollars per year, the highest price it has cost in any one year since we have been operating our legal committee. The insurance company makes a profit of all it costs over that.

We have tried, on three different occasions, to organize mutually to do the thing and we have never been able to get more than 500 of our members to undertake it at any one time. I don't know why it is doctors prefer paying the higher price for what they buy than they have to, but it seems that is practically unanimous among them. You would think, in the first place, that the Louisville physicians coming a least in contact with more business men,

would have been the first to take advantage of such an opportunity. Out of 496 in the state who were willing to undertake this thing mutually (we tried it three years ago) there were less than forty from the Jefferson County Medical Society.

We can still do it for three dollars or we can do it for twenty-eight. It is a matter that I don't believe we ever will do for three dollars, and I want to say very frankly that I feel a little humiliated when I make that statement.

On the automobile liability side the studies that were made by the societies of Virginia, Delaware, Maryland, Pennsylvania and Kentucky showed that extending over a period of ten years the average cost per year per car of all models was six dollars. Virginia has continued to carry their insurance on that plan since that time, paying six dollars. I think they have increased it to seven dollars and a half in the last two years, but that is the only state that has undertaken that thing as a whole.

I am inclined to recommend that we approve the proposition submitted by Major Byars and I do that with, as I say, a feeling of rather profound humiliation because it is very difficult for me to feel myself that we ought to classify ourselves as desiring to pay three or four or five or six times as much for protection as there is any necessity for doing merely because we won't get busy and do the thing ourselves.

As far as we are concerned at the office, we would be perfectly delighted to do it. Our proposition, as you will recall, was that we would let each member of the Association pay fifteen dollars a year for malpractice indemnity protection. For the first year that would be some \$30,000. After the first year reduction would be made from that fifteen dollars for the amount of that reserve. We could keep \$30,000 in the treasury all the time and it has never cost us more than three dollars, up to the present time, in any one year. It wouldn't cost that much this year. That is a matter for the House of Delegates to determine for itself.

I am inclined to think that as a practical matter we will save the cost of membership in the American Medical Association, the state Association and our county societies by accepting Major Byar's proposition and we can save much more by doing it ourselves.

W. B. McCLURE, Lexington I would like to ask if this is adopted will it in any way affect our present medical defense organization within our society.

SECRETARY McCORMACK: No. We will continue to defend our members.

As a matter of public policy you recall, Dr.

McClure, that before the medico-legal committee was constituted in this Society the Court of Appeals never made a single decision in favor of a doctor in a malpractice case in all the 150 years of the history of Kentucky. Since we have had the Medico-Legal Committee we have not lost a case in the Court of Appeals except in two instances. One of my compatriots insisted that the attorney be dispensed with, and he managed the case. He couldn't coax the case into a position where there was any chance of winning it at all.

There was only one other case that was decided as evidently one of malpractice. The facts weren't brought out when the case went to trial.

As a matter of policy, regardless of anything else, those of our members who are not far-sighted enough to carry the insurance for the mutual protection of any one of the rest of us, it is important that we protect them from negligence when they are sued because we don't want to get adverse decisions in public court records as it will do the profession in other states harm.

I think we should continue to do our medico-legal work defending these men. I am sure it would be a matter of satisfaction for the six men who have had adverse decisions against them in Kentucky since 1903 to have had a policy of this sort.

W. B. McCLURE: What I wanted to bring out was this: Supposing that 1,000 or 1,500 members of this Association go into this, take this insurance, then what would be their attitude toward the fee that we are charging because they recognize that part of our annual dues is for medical defense? Won't they feel that they are no longer dependent on this Association for their defense and won't they expect that the dues that are assessed for that purpose should be reduced?

B. L. HOLMES (Carrollton): It is very specifically stated in the Council report that the Kentucky State Medical Society furnishes legal defense only to the unjust malpractice suit. How about the just? The question is, who determines whether a suit is just or unjust?

SECRETARY McCORMACK: The county society and the councilor for the district.

Under the rules of the Medico Legal Committee, the president and secretary of the county society and the chairman of the Board of Censors and the councilor of the district are the committee to investigate in any case.

Up to the present time we have only had one suit brought against a physician that was considered an unjust suit, and in that suit the representative of the profession testi-

fied against the defendant doctor, the state board of health revoked the certificate and ran him out of the state. He amputated a leg when he was drunk and got the flap on the wrong end. Under the circumstances there wasn't any chance of doing anything else.

J. A. ORR, Paris: It seems to me that we should investigate this proposition further before we give our endorsement of it. It seems that this rate is much higher than the Medical Protective Association is asking and inasmuch as we have a representative of the Medical Protective Association right downstairs why couldn't we get his figures on the thing and what his policy states before we take action on the other? His rate is a good deal higher.

My understanding of group insurance is that it would be much cheaper than when taking an individual policy. I don't see any advantage in this policy, in paying twenty-eight dollars when you can buy it for twenty-one dollars.

PRESIDENT STILLEY: Any further discussion?

A. D. WILLMOTH, Louisville: I wouldn't practice five minutes without insurance.

The thing that appealed to me at the very outset, and Dr. McCormack mentioned it, was the fact that it was group insurance. It is a well known fact that all large organizations carry group insurance. They won't trust to carry the individual policies for this fellow and that fellow, and this woman and that woman. They carry group insurance.

It is true, under the figures here, that it doesn't lessen the cost any, but when you class the two together, automobile and liability, you get quite a reduction and personally I think it is a good idea. I think the state medical association should carry group insurance, and it does produce a saving when you carry the two together; and it operates out of one office, so to speak, and I think that has an advantage.

All of us are inclined to overlook policies, and so forth, and when it is operated out of one central office it would be better and we would be less apt to let our policies lapse.

Personally, I think it is a very good idea to carry group insurance and I would like to see the Kentucky State Medical Association do that. I believe in centralizing everything and I think the very minute you get attorneys who are doing this kind of work—and I want to say to you that there are several of them doing it—and have their names appear every time in the office in connection

with various suits, they will quit bringing suits for malpractice. He can bring the suit down here and it is never generally known that the same man is bringing the same suits, that he is making his living out of it. He doesn't hesitate to do so, but the moment you put the light of knowledge on him and let everybody know who is doing it, you immediately prevent him from filing those suits. I think on that score you have in this an advantage and, personally, I would favor it and I would like to see some action taken along that line.

J. A. ORR: I move you, sir, that this question be laid over to at least one other meeting to allow the members a further chance to investigate this proposition.

SECRETARY McCORMACK: I would suggest, after the motion is seconded, that we ask the representative of the Medical Protective Association to appear and discuss the matter.

I know the New England states have adopted a group insurance plan for their Association and they make a payment in some states of fourteen dollars and some of sixteen dollars. I don't know the conditions between those two, but at least seventy-five per cent of their membership get this protection.

I will second Dr. Orr's motion.

I move it be made a special order for tonight. That would be the best time to discuss it.

J. A. ORR: Don't you think it would be better to wait until all the delegates get in? They will get in at eight o'clock.

SECRETARY McCORMACK: I suggest it be made a special order after the arrival of the evening train.

J. A. ORR: I think it would be better to discuss it tomorrow. Those delegates coming in at eight o'clock probably won't be able to find out what it is; they won't be informed on it.

PRESIDENT STILLEY: Is your motion for any special time?

J. A. ORR: Put it over to the session tomorrow.

SECRETARY McCORMACK: I will second that.

PRESIDENT STILLEY: The motion by Dr. Orr is that we defer action of the House of Delegates until tomorrow's session; the motion was put to a vote and carried.

PRESIDENT STILLEY: I believe the next is the Treasurer's report.

W. P. McCURE: The Treasurer's report is published.

If I might indulge in a few remarks that

are somewhat personal, but I trust not egotistical, I would like to say that I came here with the conviction, which has been corrected by the way by our all-wise Secretary, that this was the meeting for the election of a Treasurer and Secretary but I find it is not until next year. However, your Treasurer has served for twenty-four years, having been elected at the time of the reorganization of this Association in 1903, during which time the Treasurer has been present at every meeting but one and was detained then on account of illness in his family.

A considerable sum of money has passed through the treasury during that time. At the beginning our assets for paying off the expenses of the meeting were at an irreducible minimum. Now we have the healthy sum of \$12,012 and something in the treasury.

During these twenty-four years the books of the Secretary and Treasurer have balanced to a cent every time except one and that was before we adopted the present efficient, and I think splendid, system of bookkeeping.

I want to express my appreciation and thanks to the Secretary and his corps for their aid, sympathy and co-operation.

Now this does sound a little like I was getting human and egotistical, but I just wanted to tell you the facts. (Applause)

SECRETARY McCORMACK: Mr. President, I want to say just a word about this Treasurer of ours.

In point of years, he is the oldest elected servant of any state medical association in the United States. I made an investigation last year in Chicago and found that to be a fact.

He was selected as Treasurer because of his Scotch ancestry and he has enforced a line of economy which has resulted in the accumulation of our surplus. I would like to say in this connection, however, that while we have a comfortable surplus it is because we have not undertaken many activities that are being undertaken by our other state medical associations. The majority of the states now have annual fees of twenty-five dollars and they are undertaking very much more work than we are. In Ohio, Texas and the Pacific Coast states, Pennsylvania and the New England states they are now doing a class of post-graduate work that appeals to me tremendously. I am sure it would be of tremendous help to the profession of the state.

In Ohio they have three groups of post-graduate courses that are being taken to the county societies of the state throughout the

year. Specialists of that state and general practitioners, both from the city and country, are being employed to put on a definite post-graduate course best in accord with their experience and their ability. They have been very much pleased with the work that has been done.

Some of the activities I don't think we would want to undertake. The Texas association has undertaken a very large and quite expensive advertising campaign that I believe would be unnecessary in Kentucky, and I don't believe our profession would approve it, but there are a great many activities that we could undertake if we had more money.

We have saved money but we have also been niggardly with our activities and I look forward to the time when no other state association is permitted to do more than we do for our own profession.

Dr. McClure has been a 'Treasurer par excellence. He has been careful in the management of the affairs of the Association and has been particular in calling our attention to any slip at any time in the management of those affairs. And the fact that we have our healthy surplus is largely due to his wise and statesmanlike action in many matters, both in this House of Delegates and in the Council, and in the actual work of the Treasurer's office.

It has been a pleasure to co-operate with him in every way because he has made it easy to do the right thing and impossible to do anything else.

D. M. GRIFFITH: Speaking of the surplus, I feel peculiarly interested in this medico-legal matter because it was established as a recommendation in my presidential address.

I was just wondering, in view of the surplus and the failure to accumulate a sufficient fund, if it wouldn't be possible to use this fund for such action as this indemnity insurance.

PRESIDENT STILLEY: I am sure everyone who read Dr. McClure's report is very much gratified to know that we had a Scotchman as Treasurer, and I am sure the suggestion Dr. Griffith has made is one we ought to think about quite a bit because we haven't been able to get the money in any other way. We do have a surplus, and so long as it is guarded with the hands it is I am satisfied it wouldn't be given away.

Dr. McClure's report will go to the Auditing Committee.

REPORT OF THE SECRETARY.

SECRETARY McCORMACK: I want to call attention to one of the most gratifying things that has ever happened in the medical history of Kentucky. It is very difficult for us to realize what happened in the mountains during the recent flood.

The people had retired to bed and an avalanche of mud, telegraph poles, rocks and trees came rushing down those narrow valleys and overwhelmed their fragile homes, killing many of them and leaving in its wake destruction and terror and misery. It is absolutely impossible to describe it. Those who weren't there will never know just what happened, but when I went into those little houses and saw them with two or three or four or five feet of stinking mud covering everything, their yards absolutely impassable, many of the residents spending the night or part of the night and the next day on house tops or in trees, many of them killed, it was a scene of desolation and waste and death that is indescribable. The memory will always be a horror to all who saw it.

During the Monday and Tuesday following, in Perry County for example, the doctors of Hazard met and by six o'clock that night every place where a poster could be put in that vicinity, and runners carrying them to remote sections of the hills, they were placed warning the people what to do in order to have safe drinking water and what to do in order to prevent the spread of pestilence and infection. Five days before anybody outside of that desolated section knew about it, inoculation against typhoid fever had already begun by every doctor in the whole affected area. They had the typhoid vaccine which we were able to furnish without expense and the inoculations were already started by the hundreds before the first aid got in. And as rapidly as our doctors and nurses from the outside were able to get in, careful organizations were made and it was extended rapidly.

That happened in every single one of the counties affected. Even in those counties where there were only two doctors they responded immediately to the demand of humanity and did one of the finest pieces of preventive medicine that has ever been done in any section of the country. The unanimity and promptness was one of the finest things that has ever been.

Nothing else that has ever happened in Kentucky has ever animated me with a determination to give more of myself and I know that same feeling exists in every one of you as you think of their action in protecting the health and lives of our people.

Last week we were honored in Kentucky by

the visit of the state health officers of three of the states of Australia, the state of West Australia which is 2000 miles in extent from its northern to southern extremity and about 600 miles across, and the more populous eastern states of New South Wales and Victoria. They were the guests of the Rockefeller Foundation studying particular problems in public health in the United States and they sent them to us to particularly study the character of our organization, our county health work, the work that we are doing quite effectively we had felt, and yet very much less effectively than they have done it in Australia in the care of the mother and child, venereal disease and trachoma.

These were three of the finest men I have seen, broadly cultured, and it was a delight to come in contact with them. Some things happened that made me rather thoughtful and gave me a rather different viewpoint than I had had heretofore as to a great many things.

We went down to the Irvine-McDowell Memorial Hospital in Richmond and on the way stopped at Frankfort, that beautiful capital. They were interested in the symmetry and character of the building.

We showed them the remarkable statue of Abraham Lincoln. One of them, whom I had gotten to know the best of the group, led me off to one side and said, "Will you be good enough to tell me who this man Lincoln was?" Neither of them had ever heard of him.

As we went on toward Lexington we saw the impressive column with the statue of Henry Clay on its top, and one of them looked up and said, "Who is the man on top of the pole?" We told them it was Henry Clay and with all one accord they asked who Henry Clay was. They hadn't known. It was a shock to know that men cultured as they were, who were giving their whole lives to public service as they were had not been animated by the heroes that have helped so much to make us feel that we are able to do the things those men led us into doing.

Yet as we went along I thought, supposing I had gone to Australia and had seen some monuments down there, about which of their leaders and of their heroes do we know anything? So I said, "If we went to Australia whom would we see monuments to?"

"Nobody yet. We are too young. Like your colonies originally, we were settled as a penal colony, which happened only seventy-five or eighty years ago, and some of them are still living. We haven't forgotten about them but we can't make heroes of them yet."

I have found that possibly we have misconceived the source of our inspiration for our services, our humanitarian service. After all,

in common with service the Great Physician and the Grand Master of the universe had animated them with different lines of thought, with different names on their tongues, but after all it was the common, great source of all human good that had animated them and was leading us.

When we arrived at the hospital in Richmond they were tremendously impressed with the simplicity and the effectiveness of the operation for trachoma that had been devised by our beloved John McMullen and perfected by those of the profession who had devoted themselves to ophthalmology in Kentucky.

That wasn't the thing that struck them as the most remarkable. They happened to see six cases that had, in addition to the trachomatous inflammation of the conjunctiva, the ulceration of the eyeball itself that had resulted from long neglect of that serious condition, and the thing that impressed them wasn't so much that the cases were going to be relieved as that these had been permitted, over a term of six to eleven years, to develop without having anything done for them in that entire interval; that this huge Kentucky section handy to the railroad, our miner or farmer as the case might be, had been permitted to remain in that state of neglect.

I was very much interested to have them say that had such a thing happened in Australia it would have meant a change in the government; that any Premier who permitted an individual in Australia to be neglected when he needed medical attention would have been put out of office by an indignant Parliament in the next session of that Parliament.

It was an interesting viewpoint, and I found that in that great commonwealth where the death rate of the women in childbirth is about one-third of ours, they have excellent telephone connections over the entire commonwealth, as they call it, where a woman about to be taken in labor may telephone to the nearest hospital or the health department. If an airplane is necessary, or a car in the more closely settled communities, it goes to the house and brings the woman to the hospital where she is cared for at her own expense if she has the money, and at the expense of the commonwealth if she hasn't the money. The same thing applies to all other forms of sickness.

"When we got in that country the gold was there and had been there for countless ages. The pastures for our sheep and cattle were all there. Everything that made our national wealth had been there all these centuries until men came along. It is the manhood and womanhood and childhood of the commonwealth that makes the wealth available, makes it useful, makes it worthwhile, and our people

have built up their entire governmental system with the idea that the most important thing in the world is our citizenship and that every individual has the right to proper, adequate and prompt care when they are sick or when they are disabled in any other way; and in that way we have built up the wealth of our country."

It gives me a line of thought that I hadn't had before, and I am passing it on to you and through you, in turn, to those with whom you come in contact and that you are helping to lead along the right line.

The professional organization in the state has moved along splendidly during the past year in most of our counties. We are having more regular meetings in more counties than we have ever had before in the history of the profession; and yet when you come to hear the reports of delegates you have the usual number of cases in which they will report that there are no county meetings, that they are doing nothing and that very little is being accomplished by the men of the profession in that particular county.

The counties that are not working feel a little bit more their ineffectiveness than they have done heretofore because they realize that they can work when somebody in the county will develop the necessary leadership to bring the meetings together; that as soon as something is put before the members they will come together for the feast that is prepared for them if it is made a feast. That requires somebody's self-sacrificing work.

It was a delight, in driving from Louisville to Dawson Springs, to realize that in eight counties through which I passed on that trip there are six counties that have all-time health departments organized by the action of the profession together with the people in the several counties. There is great work being done, where the profession is valued as never before, and as these all-time health departments go on developing, as children are examined in the schools, they will grow up taught the necessity for examination. They will grow up knowing that trachoma, diseased adenoids, appendicitis, hernia or hemorrhoids ought not be left that way, that they ought to be cured, they ought to be relieved, that it is their duty to get relieved, a duty to themselves and to their fellowman; and as we build up that idea in our educational systems we will develop a demand on the part of people for more adequate treatment and there will be a greater demand for the services of our profession in its highest and best forms in the future as a result of this work.

We are going to be rid of many of the useless nuisances of the past. It is only a question of a little time until there will be no ty-

phoid fever, a question of possibly less time when we will have no diphtheria. There will never be a time when there will not be constantly developing those defects in the young and the disabilities in the old that are going to need the careful supervision and care of learned members of our profession. The thing we are seeking to do is to see that that attention is given early instead of waiting until too late as we have so frequently had to do in the past.

I know as I come to you again this year, I come to you with the feeling that we have made greater progress in the last year than we have ever made before in the history of our profession in Kentucky, and that from this year on we are going to see our profession appreciated, legally recognized as it has been heretofore; we are going to see it given far greater function in the administration of affairs in our Commonwealth than we ever had before, and from year to year we will be called to assume more work and to do more things for the Commonwealth.

It is therefore with especial pride and pleasure and gratitude to the doctors of Kentucky that I come back to you again this year making this annual report, feeling that we are really more worth while as a profession than we have ever been. (Applause)

PRESIDENT STILLEY: Report of Councilors by districts.

I might say as councilor for the first district that I am not quite ready to make mine yet. I will call for it later.

REPORT OF COUNCILOR SECOND DISTRICT.

D. M. GRIFFITH, Owensboro: I can report the profession of the second district in the most wholesome state of affairs. We have had none of the disagreeable things that usually occur. Everything is harmony and we have 129 members this year as against 119 last year, a gain of ten members, and I think done at less expense to the society than ever before.

PRESIDENT STILLEY: Report by counsel. Honorable J. C. W. Beekham.

SECRETARY McCORMACK: Governor Beekham asked me to say to the House of Delegates that on account of arduous duties in other lines it will be impossible for him to be here, but he asked me to convey to the House of Delegates his very great appreciation of their splendid work in cooperation with him during the year; that the activities of our counsel have been called on for more work during this year than in any previous year and as a result we have secured a large number of convictions for violation of the health and medical laws than in any previous year.

In the matters pertaining to the development of our health program, Governor Beckham has, of course, been very active in this connection and he asked me particularly to say to the House of Delegates that one of the most remarkable things that has happened in the state of Kentucky in his knowledge of its legal machinery was the prompt approval by Governor Fields of the request of the state board of health for his official support of the health program following the flood disaster; that the progress in the organization of health departments has been greater in Kentucky during the past year than in any other state in the Union during any five years of its existence and that that had been due to the statesmanlike attitude of our Governor in this particular emergency.

Governor Beckham said he regretted extremely that he was not able to be here to express in person his very great appreciation of that statesmanlike attitude. He hoped very much, until the very last moment, he would be able to take a day off and be here in order to present these matters to the House of Delegates personally, but he assured us that he would continue to do more effective work for public health and for better medical preparation and attention during the coming year than he has ever been able to do before.

D. M. GRIFFITH, Owensboro: Might I ask the floor as a special privilege? I am compelled to leave.

We have in our midst two eminent doctors who have grown in the slow progress of a long and professional life. Each of these men would be outstanding citizens in any community.

As a mark of professional esteem and as a mark of honor, I move the following resolution be adopted:

RESOLVED, That the Kentucky State Medical Association, in convention at Owensboro, Kentucky, is mindful of the many distinguished doctors of the Pennyroyal Section who in the days that are gone contributed so much to the glory of our profession.

And conscious of two pillars in our professional temple still standing as staunch medical men of distinction, invites Dr. J. W. Ellis and Dr. S. J. Harris to be its honored guests and requests them to be present and occupy seats beside the President at the installation Tuesday morning. And that the Secretary be instructed to convey to them this resolution and in behalf of this Association congratulate them upon their years and honors and express the unanimous hope that their shadows may continue to lengthen through years to come. (Applause)

SECRETARY McCORMACK: I second the motion. I suggest we vote by acclamation and by a rising vote.

The motion was carried by acclamation, the audience arising.

PRESIDENT STILLEY: Report of Medico-Legal Committee.

SECRETARY McCORMACK: I suggest that be passed.

PRESIDENT STILLEY: Report of Business Manager:

L. H. South, Louisville: We have been able to follow our usual policy of having every article printed that has been sent to our office.

For several years ago we were not able to do this, but this year we have been and I have written to the county societies and other societies telling them if they have any articles to send them to us and we will publish them.

I am especially interested in having this post-graduate work, as Dr. McCormack referred to, established. Dr. Kinnaird, Councilor of the seventh district, has been working on this for two years. In a small way I have been doing this work by securing speakers for county societies. We have promised to have this started this fall but Dr. McCormack has been so busy with the flood condition, and I have too, we have not been able to do much work on it. But I think that would be one of the most valuable contributions to the Society.

A great many doctors are not able to leave their communities. One doctor said, "I am the only one there and there is no one to take my place. The people are uneasy and unhappy when I leave." I feel we must take this work to them. There are so many new developments in the practice of medicine, so many things that we have never thought about at all. The practitioner must have some idea of the value of nutrition, the value of good teeth, and another thing I want to speak about is the care of their offices.

It is most pathetic to go into doctors' offices and see cotton lying around covered with blood and pus, the lack of facilities for sterilizing their instruments, and I feel we must clean up ourselves before we can be leaders in public health.

If a doctor goes to see a patient and his teeth are rattling in his head and he has pyorrhea, he is not a fit doctor to establish public health. We must begin to work among ourselves first and then we will be able to carry messages of health to the laity by example and precept.

Someone must be the leader in all these new problems that come up. There are the women's clubs. Even in the little town of Williamsburg I heard one of the most carefully prepared addresses on how to feed a baby by a club woman. When you go to these communities to speak you will find they know as much as you do about many public health problems—because they study it. It

was a revelation to me, and I travel a good deal about the state, to see their ability to grasp these new things.

One of the most interesting articles this year is in the *Atlantic Monthly*, about the care of the sick. There are over 2,000,000 sick people every year in the United States and the cost of maintaining and building hospitals amounts to \$1,500,000,000. It is a very, very interesting article and I wish you would all read it, "The Cost of Illness and Secret Anxiety," by Anna Miller Downs, and she tells of the great problems facing persons in the ordinary walks of life. If they get sick what happens? If they have an operation for appendicitis, with the surgeon's fee, the hospital and nurse's bill comes to about \$1000 or \$1500.

This magazine has quite a large circulation and the people are learning these things much faster than we are able to give it to them through the channel we should. All this, I think, is one of the new problems that has come into medicine.

In the State Medical Association it has always been a source of anxiety that we fall short of money. I have been associated with the State Association since 1906. I remember one year we got to the ragged edge of nothing, and it is always well to have a surplus. You see this \$12,000 looming up and you say, "What are we going to do with it?"

I had always hoped we would have a foundation of money, \$15,000 or \$20,000, to further advance the ideals of the state medical Association, things such as, "Why should we not have a student loan fund to educate some boy in medicine?"

I have a little laboratory school in Louisville and I have established, at least Dr. McCormack established for me with two or three free scholarships and if I ever get short of money I wouldn't hesitate to make those girls pay me back.

I know of a young man whose father and grandfather and great grandfather were physicians. His father died very suddenly and didn't leave much money,—a magnificent boy,—and with Dr. McCormack's help he was able to go to college. If we could lend that boy \$1000 toward his medical education he could more than pay it back.

There are just innumerable instances of that kind that our Medical Association ought to take over. But do let us keep some money in the treasury in case something happens. We ought to have this foundation fund. I think we ought to have a certain amount because you never know what great calamity may occur that may completely deplete our treasury.

We have been safeguarded through Dr. McClure's kindness and Dr. McCormack's help and through Miss Grant's ability in keeping down the expense of the *JOURNAL* and trying to get every article we can in it and not be extravagant, and trying to get more advertising. If you have noticed the *JOURNAL* this year we have had far more advertising than the year before.

It is a special joy and privilege, really, to be able to have a comfortable feeling financially. I think you want to keep ourselves out of the poverty class. The Association is no longer poor and I hope we never will be, and let's keep this money intact for a while (Applause)

PRESIDENT STILLEY: Report of Committee on Legislation and Public Instruction.

I am Chairman of that Committee. I see no other committeemen here, so I will ask for more time on that.

Report of Committee on Miscellaneous Business, W. A. Page.

SECRETARY McCORMACK: Nothing has been referred to them so far.

PRESIDENT STILLEY: Report of Committee on Disaster Relief.

SECRETARY McCORMACK: Dr. Prather hasn't arrived.

PRESIDENT STILLEY: I believe that ends the business.

SECRETARY McCORMACK: Mr. Presidents, I would like to make a little statement to the House of Delegates in regard to the situation in Richmond concerning the Irvine-McDowell Memorial Hospital.

Those of you who have been there have seen how it has been renovated and beautified and it is now one of the show places of Kentucky. It would be a pleasure to you to see on the stone columns at the entrance, on one side the Irvine-McDowell Memorial Hospital of the Kentucky State Medical Association, and on the other side, this Hospital is conducted by the United States Public Health Service co-operating with the State Health Board. I think it is sentimentally, as well as practically, one of the most beautiful things that has ever happened in the medical profession.

This institution owned by the doctors of the state, conducted by the governmental agency representing them, is relieving hundreds of people who would otherwise not get relief from trachoma. It has a capacity of twenty-five beds and they have a long waiting list. It is working right up to capacity constantly. The work is being done by Dr. Robert Sory, former practitioner in Madisonville, and is being done most effectively.

The suit for the endowment fund for the upkeep of the institution is still in the Supreme court of Missouri where we are expect-

ing a decision at almost any time, and we confidently anticipate a favorable decision which will give us \$2000 a year to keep this property in the splendid shape in which it should be kept.

At the present time a new heating plant has been put in, the building is splendidly equipped, new roads have been built through it, and whenever you go to Richmond or are in the neighborhood of Richmond, I know you will enjoy very much and take a great pride in seeing that institution. You will see the portraits of Dr. McDowell and his wife and several of the other distinguished members of that great family who have contributed.

There are many things in the property that are of enormous value. There is a portrait of the donor and her sister and other members of the family. There are many pieces of furniture and old china and glass that are of enormous value. Of course we have them hid away for safe keeping but unfortunately we can't offer them to the State Historical Society. Some of the most valuable things have been put in cabinets where they can be seen. Among those things, two of the most valuable and two of the most interesting in the state of Kentucky are a medal given to General Isaac Shelby given by Virginia in the battle of Kings Mountain in the Revolutionary War, and another medal given to General Shelby by the First Congress of the United States. These are things of surpassing interest and of very great historical value.

I want the readers of our proceedings in the JOURNAL to know that they will always be welcomed by Dr. Sory at the hospital, in addition to seeing the very excellent work that is being done for the poorer patients sent to the institution. In sending patients it is only necessary to spend the transportation; the other expenses are cared for by the hospital fund.

Mr. President, before we adjourn I would like very much for Dr. South to tell you about the course she is giving at our laboratory in Louisville for laboratory technicians. This is work with which the profession is already familiar, but I believe from time to time it should receive reports as to the progress because I don't believe we are undertaking a finer piece of work than this anywhere and it is a matter of great interest to members of the profession because so many of them sent their daughters and wives to this school. In a good many other instances they have selected young women from their acquaintance to take this course and they are now holding responsible positions in this and other states.

This work has been developed as a by-product of the laboratory. The state doesn't contribute a penny and Dr. South has never re-

ceived a single cent for her services in connection with this work. Her reward has come from the grateful girls who graduated from this institution, and the unspoken and unknown gratitude of thousands of people who have been helped to recovery because of the accurate work done by graduates of this laboratory.

L. H. SOUTH: Nothing gives me greater pleasure than to speak of the laboratory school. It was founded out of necessity. I had great difficulty, as all laboratory workers will tell you, to get accurate help so I had to train them. When they would become valuable other opportunities were offered, higher pay, and they would go to other laboratories and then I would have the same process to start over again.

For instance, Miss Peterson was with me for ten years and another State Board of Health offered her \$250 a month and naturally enough she took it. She has charge of the branch laboratory.

I conceived the idea of training these girls for positions in state laboratories, hospitals, and clinics.

To operate in a Grade A hospital you must have a laboratory technician so I determined then to open this school and train these young ladies to occupy such positions in hospitals so as to bring the hospital standard up, to occupy positions in physician's offices and clinics and in state and public health laboratories.

I secured as my instructor a young lady who was Dr. Abbott's first assistant in the University of Pennsylvania.

The next year I had to get another one. Miss Sherwood is now in Yale University.

Next year I got Miss Wales. Miss Wales had been the assistant in the state laboratories in Pennsylvania and she was a graduate of Vassar College. At that time I was very deficient in chemistry myself and I went to the University of Louisville to take up chemistry.

I think I have found the problem of teaching. We take these pupils and give them a course of lectures. Then they go to the laboratories and they do what we have taught them to do. If they don't understand what they have been taught there is someone to go over and over and over it until they have learned that one thing. The directions are down in black and white. So many c.e.'s of this and so many c.e.'s of that, and so forth.

I believe in personal instruction. I have a class of twenty pupils and I have two instructors who devote their entire time, never leave the students during the entire day, and I give a great many of the lectures and do a great deal of work for them.

I outlined a course that I thought would be adequate for the needs of these institutions

that they were going to. I first taught them the preparation of culture media. They have learned to make every different type of culture media. The Rockefeller Foundation and the Mayo Clinic, the Mulford Laboratory sent me the technique of making special media as hormone agar, etc.

Then we started on intestinal parasites. We gave lectures on all the intestinal parasites found in the southern states that they were liable to come in contact with. I wrote to all the mountain schools and asked them to send me all the suspected hook worm specimens they could possibly find which they kindly did. One teacher in Pine Mountain settlement would collect all the specimens and send them in for the class to work on. Then our own specimens of hook worm, as soon as we finished working with them and had made our reports, were turned over to them for class work. They examine the specimens and compare their results with the results we have.

We do give written examinations on parts of things we give them to do. Every girl must report on at least 100 intestinal parasites, 100 typhoids, 200 blood counts and 100 urines.

For the urinalysis we get specimens from every member in the building, and they their own specimens, and the City Hospital each morning sent us a basket of specimens of urine with reports. We keep the reports and the students compare their reports with the hospital reports. That is the way we teach urinalysis.

We give them quite an extensive course in blood chemistry. Dr. Hayes Davis and the city hospital sends us all the blood filtrates and the results; then the students compare their findings with these. The students will bleed themselves or each other and test the blood in that way.

We spend six weeks on Wassermanns. We teach the Kahn test, the colloidal gold test, everything that the students will probably need in a well established laboratory.

The course extends over eight months and they spend their entire time during the day with the instructors so they feel we give a very adequate course. I have graduated so far about 250 pupils and I have secured positions for these pupils in almost every state in the Union with not one pupil returned for incompetency.

We send out about 6000 letters to every hospital in the United States, and the state medical journals have been very kind to give us advertising space in their publications. Some of them charge and some do not.

At the end of the year every girl knows where she is going. I have placed them according to the positions I think they can hold. When I send those girls to these places I tell

them, "You are going out to do this work and I am going to watch you constantly." I lecture to them all the time on work. I make them clean up their own slides. I say, "Nobody is going to pay you \$100 a month unless you work and earn it. When you get this job I am going to write to the doctor and find out how you are doing. If you do not work and cannot hold your position through laziness, I am not going to recommend you again."

The consequence is that when these girls get to the jobs they write back and tell me what the people say about them. I wish you could read some of the letters that the doctors have written about the graduates I have sent to them.

I charge a tuition fee of \$250. This fee covers the cost of instructors.

I have bought the best microscopes. I paid \$150 for every microscope those pupils use. For the blood chemistry they have all the apparatus they can use. They have their own incubators, their own ice-boxes, and all their own stains. I buy the best stains made.

I get malarial slides from Panama. I get hook worm specimens through the state. Dr. Turner sends sputum, with this cooperation they have an abundance of material.

Yesterday we had a case of malaria. I immediately wrote to the doctor to send me as many slides as he could possibly get of the malaria case so I can give them to my class.

We have students in every state of the Union. I have one that has charge of a hospital in China. I have one pupil in charge of the city laboratory in Huntington, West Virginia at \$200 a month and a car furnished her.

I have added to the laboratory dairy inspection work. I am going to teach these girls to do dairy and restaurant inspection.

I am giving them a course in preparation of tissues for the interpretation by the doctors. I teach them to prepare the slides and stain them. If they go to the hospital they can make the tissue preparation and the doctor will be a pathologist. The College of Surgeons will recognize such arrangement.

We teach them water analysis, breast milk analysis and of course blood counts and urinalysis.

In the summer months we give an office assistant course. We only take those girls who are employed in a doctor's office. We give her any instruction that a doctor wants. One doctor has a liver function test that has to be done every six weeks. He asked me to train his office assistant to do this. Anything that a doctor wants his office assistant trained in, we train her. We make a great big chart

showing them how to count blood. We have them copy it off in a note book, putting in the red and white blood corpuscles on the chart and the doctor can supervise what they are doing but they are learning the technic of it. They do the blood counts and urines every day and we vary with the intestinal parasites. This office assistant work is, I think, a very interesting thing because some doctors have had girls in their offices for five or six years. They know the routine of the doctor's office but I teach them the little things that they don't know and which are a great help to the doctor.

J. W. STOVALL, Grayson: The young lady I have has certainly been a great help to me since you trained her.

L. H. SOUTH: We run the course during the summer months. Dr. Minor, the great tuberculosis specialist in Asheville, North Carolina, has one of my girls and I got a telegram before I came down from the state board of health to send them a good laboratory technician. I have four positions at \$125 and maintenance and I can't fill them. I feel it is getting quite a reputation all over the United States.

This year I had more pupils than I could accommodate. They would go to see Dr. McCormack and ask him if they could take the work and he would say, "Yes, you can take it," and the first thing I knew there were fifty pupils and I didn't have any room for them. Finally, I thought I would just select those I wanted. Nothing makes Dr. McCormack so mad as to select pupils. Dr. Blackerby came to my rescue and he said, "Start two classes." So I have a class that starts at eight o'clock and works to twelve-thirty with a half hour for lunch. Then from one to two they are in the lecture room. The next class starts at two o'clock and works until seven. The rivalry between them is very interesting.

One girl said, "I like my class so well I will go to both of them." She goes to see what both of them do. They are getting along beautifully and the girls are so interested in their work, they are so anxious and willing to learn. We give them personal instruction. Every girl is taught to do everything. We teach her and see that she does learn them.

I say, "Anything you don't understand in this course, ask the teachers. That is what they are here for." Miss Wales gives the lectures and she has an assistant. Mr. Sandlin who conducts the afternoon class has an assistant. It is very interesting and something of which we are very proud.

I do want to say this one thing, that I use the surplus money I have in fixing up the laboratory for the state board of health. I

have given the state board of health \$1500 for improving the laboratory and this year I have repaired all the sterilizers and put in extra tables, so now we really have a marvelous laboratory for the state board of health and we have all the equipment that the state really needs that we couldn't have gotten otherwise. (Applause).

SECRETARY McCORMACK: Incidentally, Mr. President, we have been able to manufacture all the typhoid vaccine we needed and were able to supply, during the flood, to other southern states large amounts; also to the Red Cross and other state health departments in the South from our excess to help them in their needs. Dr. South is making enough next year to inoculate 1,000,000 people in Kentucky and it is up to us to use it.

PRESIDENT STILLEY: Is there any new business to come before the House of Delegates?

W. B. NEGLEY, Owensboro: It has been brought to our attention by one of our members that in case of the death of a patient the undertakers, lawyers and grocerymen have preferred claim.

"THEREFORE, BE IT RESOLVED: That the Daviess County Medical Society at its session, September 27, 1927, went on record as being in favor of such legislation as would make bills for medical services preferred claims.

"BE IT FURTHER RESOLVED: That the Daviess County Medical Society requests its delegates to the Kentucky State Society which meets in Owensboro, Kentucky in October 1927 to present this matter to the House of Delegates for their consideration."

It occurred to us that if the lawyer and undertaker could step in with preferred claims, we should take some steps toward getting the doctor's bill a preferred claim. I know of one or two cases in this county where a doctor gave his devoted service in a special case for a period of eight months for a continued illness. This patient died at the end of this time, owning some real estate although not much. The grocery bills, nurse bills and undertaker's bill were all paid and he lost his claim.

The question came up as to whether this resolution should be stated as desiring this bill to read "for deceased claims only," but we thought it would go through for all claims if it went through for deceased claims. I think a doctors claim should be a preferred bill as well as any other. I would like to hear a discussion of that.

PRESIDENT STILLEY: The resolution is open for discussion.

W. W. SPICER, Calhoun: I am highly in favor of that resolution and I think our rep-

representatives should pass on it at this time.

J. A. ORR, Paris: I move it be referred to the Committee on Legislation.

The motion was regularly seconded, was put to a vote and carried.

PRESIDENT STILLEY: Is there any further business before the House of Delegates?

SECRETARY McCORMACK: At the evening session the roll will be called for reports from the county societies and I move we adjourn until seven o'clock.

The meeting adjourned at four-thirty o'clock.

SECOND SESSION: MONDAY EVENING, OCTOBER 3.

The meeting convened at seven-twenty o'clock, President Stilley presiding.

Secretary McCormack called the roll.

Report of Committee on Hospital Standardization.

H. G. REYNOLDS, Paducah: It seems about the chief function of this Committee is to serve as a committee to refer hospital matters to. That may be the function of several committees.

As I recall it from memory, about two hospitals have been standardized in the state in the past year, or maybe two years, and one other hospital is about ready for standardization now. That is the Riverside Hospital, Paducah. I don't know whether it was accepted or not.

SECRETARY McCORMACK: The list was published in the JOURNAL. There were two Kentucky hospitals on the list.

H. G. REYNOLDS: Very likely most of the delegates have read the issue of the JOURNAL which contained the first reference, particularly of the nursing situation in this country. Some of the smaller hospitals are functioning in a way. They have a small number of beds and naturally a small number of nurses, and their standards are such that possibly some suggestions from someone, the Hospital Committee I suppose, would be worth while to the nursing association of the state.

I notice, in looking over part of the Kentucky report, that the requirements for admission to training schools range all the way from no high school work to one and four years. That may be necessary. I am not well enough versed on the subject to say, but it seems to me if a happy medium could be reached it would be at least coming nearer standardizing nursing; that is, take one or two years, but having one to four years of high school work is rather a high range.

Some of the hospitals possibly are entitled to internes. I don't think there are more than four or five hospitals in the state that have

interns or that are entitled to interns. It seems to me there should be more hospitals in the state with interns than that. I know the difficulty of getting interns in smaller hospitals, but it always seems to me, particularly as we have gotten far enough away from the after-war period, we can draw the standards a little closer on nursing and possibly make arrangements for interns for other hospitals.

This about covers what I know concerning hospital standardization.

PRESIDENT STILLEY: Is there any new business?

A. D. WILLMOTH, Louisville: In a conference with your Secretary over a matter, I learned that the condition I had in mind was even more prevalent perhaps than I had at first thought, and that it is a very serious matter at this time. There can be no question of it, and that fact is attested by your Secretary who is the general trouble clerk of the state. That matter is this: In the past few months it has been a rather prevalent thing for members of the profession to be telephoned to and asked to report at the office of some attorney and then charged with some terrible offense and money demanded at once. In a number of instances there have been quite large sums of money had up to \$13,000 in one instance I understand.

With that in view, I spoke to the Secretary relative to offering a resolution to this House of Delegates to be passed, and with your permission I will read that resolution which is roughly drawn. If there are any criticisms it can be corrected.

"Whereas, It has been brought to the attention of members of the profession that in at least one or more of the larger cities several members of our profession have been called over phones and requested to call at once at the office of unscrupulous attorneys who immediately charge the doctor with some terrible offense and demand large sums of money, to be paid at once, under the threat of newspaper publicity, and in some instances with threats of revocation of license to practice; and

"Whereas, At least fourteen such instances have occurred during the past year and at least three by the same attorney;

"THEREFORE, BE IT RESOLVED: That the Secretary, requests each and every doctor so attacked to forward the name of the attorney so attacking, together with his address, to the office of the State Board of Health that a record may be kept, and such illegal procedures controlled by turning on the light of publicity and, if need be, by calling the attention of the Kentucky Bar Association to the practice through the legal department of the State Medical Association."

I offer that because it is getting to be a serious thing. I happen to know of a number of instances in Louisville, and if this body will take such action that the Secretary may know the attorneys, the moment they find their name is going to the State Board of Health they aren't going to do it because it would be an easy matter, if you get at least three or four instances of the same attorney, to take it to the Bar Association. They demand the money right now and they tell the doctor that the party is in the other room and that if the money is not paid they will put it in the form of a suit. They do that to get a scare out of them because they literally throw the fear of God in them.

P. E. BLACKERBY, Louisville: I move the adoption of the resolution.

C. W. SHAW, Alexandria: I second the motion.

The motion was put to a vote and carried.

SECRETARY McCORMACK: Under the heading of new business is a question that I would like to ask the House to consider.

For a number of years, as the older members will recall, it was your custom to have the meetings alternate between Louisville and the rest of the state. It was then determined to change that plan and have one in Louisville and two in the state, one in the eastern and one in the western part of the state in general terms.

It has occurred to a number of us that it might be desirable, on account of the accessibility of Louisville and the ease with which it is possible to hold the meetings there, to change our plan again to have the meeting in Louisville every two years; then to have the first outside meeting in the eastern and the other in the western part of the state. In that way we would have alternate meetings in Louisville and once in four years there would be a meeting in the eastern part of the state and one in the western part of the state.

We realize, of course, that there are certain objections to that plan. We found when we were having alternate meetings in Louisville before, it threw some extra burden on the profession of Louisville because they don't get to have much fun when the meeting is at home where he has to practice medicine and attend meetings. It doesn't get to either one very much.

At the same time there is the objection that the meeting held rather frequently in different sections of the state interests increasing numbers of men who have not previously had the privilege of attending the meeting and they will not follow it like so many of you have to the farthest corners of the state in order to be present at succeeding meetings.

There are advantages both ways. In Louisville our attendance is between 575 and 650, and of course as far as the post-graduate value of the meeting is concerned, it is great.

Those of us who practice in the country as distinguished from the three or four cities in Kentucky haven't exactly played fair on that proposition in Louisville because when we come to Louisville we nearly always bring a patient or two along with us to see the Louisville doctors and keep them from attending the meetings. For this reason the profession in Louisville felt that it was desirable to have as many meetings as possible away from Louisville.

It is a matter worthy of our serious consideration because we are faced with the increasing difficulty of finding cities with sufficient hotel accommodations to properly care for the meeting. This meeting could easily have had 400 men present if hotel reservations could have been made. In Frankfort last year, where there were half as many hotel rooms as there are here, we would have had very much larger, and certainly more pleasant and successful meetings, if we had had proper hotel accommodations.

We don't want you to get the impression, and we don't want to increase the impression that the men who attend the sessions are not going to be able to get hotel accommodations, and for that reason it seems to me to be important to consider the matter from its various angles, and I think it would be well for the members of the House to express themselves freely.

There is one thing we should certainly do under whatever conditions we consider the matter. I think the Association has reached the point where it should assume the expense of its own entertainment in whatever way it is going to do it. I don't believe the local profession anywhere should be burdened because of the meeting, and I don't think the idea, that we are so famous for in Kentucky, of our local pride should be permitted to enter into the matter of each town vying one with the other as to which is going to do the most for the Association.

Every town has made a reputation to last with the medical profession 150 or 200 years. I feel very deeply on that subject as I look at the distinguished members from Paducah, and the Association ought to meet in Paducah at tolerably frequent intervals; but we have reached a size and have the means to turn over to the entertainment committee sufficient funds to manage the entertainment.

In many of the larger associations they have a registration fee to provide for the luncheons and other things in a very excellent sort of way. It has occurred to us if, at the Louis-

ville meeting, we could arrange to have a luncheon together and have some speaker outside of the profession to make a short talk, like we do at a Rotary or Kiwanis meeting, it would add an attractive feature to the program.

There have been a lot of things suggested from time to time by the various members, and I think it would be well if you would instruct the office what you desire to do in the matter and we can make the arrangements accordingly.

W. B. McCLURE, Lexington: We heard a very excellent address this afternoon in which we were warned against hunting around for some excuse to spend this surplus that we have safely, I thought, stored up. Our Secretary is beginning right now to devise ways and means to get rid of this surplus fund (laughter) and for this reason I am opposed to it.

SECRETARY McCORMACK: I want to say in my own defense that if there is anybody niggardly about this money, and taking a considerable hand in keeping any of it from being spent, it is your Secretary. Yet my idea is that the only reason for collecting money is to use it for good purposes, and whenever the time comes to spend it I think we ought to be as courageous in making expenditures as we are in being close-fisted.

We have a balance, together with the investment, of \$12,000 but we don't get any more income, except from the advertisements in the JOURNAL, until the first of January. During this month the expenses of the Association will amount to \$1000 and by the first of January the treasury will be depleted still further. The Treasurer will be talking Scotch with broad a's and he knows from experience that what is alarm will assume a certain degree of reality.

H. G. REYNOLDS, Paducah: I would like to ask the expense of the average meeting.

W. B. McCLURE: The expenses of the last meeting were given in the JOURNAL.

SECRETARY McCORMACK: It runs between \$1000 and \$1200.

H. G. REYNOLDS: What would it be if the Association assumed the expense?

SECRETARY McCORMACK: The expense of the entertainment, I imagine, would be around \$500. In fact, it would be unnecessary to say anything about entertainment. I am an anti-entertainer. I always hate to have the business of the meeting interfered with by any kind of entertainment but I know many of you don't share that view with me.

I think these night meetings are among the best things we have. The night meeting of the surgical section tomorrow night, which is

going to follow the dinner out at the club, is going to be one of the very best things that is going to happen during this whole meeting. The night meeting on the next night is going to be an outstanding feature of the annual meeting.

The formality of an entertainment doesn't get us much anywhere. It is the friendliness of it, and I think the informal things, such as smokers, where we get together and talk over our mutual problems and renew our friendships and acquaintances, are more important to us than the more formal things that look so engaging.

Of course you are thrilled with pride when you think of the banquets we have had at the Seelbach with 1000 of us sitting around there. We poured in like we were ants and bees. It looked good when you got into the thing but, after all, is it as pleasant as the less formal and more delightful entertainments that we have at Walnut Lodge for example where you actually come in personal contact over a longer period of time with a chap you have learned to love? You love him, forever after you go through an experience like that with him. I think it could be done for less money.

H. T. RIVERS, Paducah: Don't you think we could hold over this suggestion of yours until we have gotten in communication with our state road committee? Today has opened my eyes. I believe in the course of the next four or five years we are going to have roads that we can start from Paducah and go to Ashland in one day.

There is no doubt that these local meetings do bring out physicians who would never go to Louisville. There is no doubt, on the other hand, that Louisville is an ideal place. Every man can have a room with bath, keep clean and look spruce. For the good of the society I believe we are meeting the right way, two years out in the sticks and one year in the big center. I think it does good to the society.

SECRETARY McCORMACK: I don't think there is any doubt about that myself.

PRESIDENT STILLEY: Any further discussion?

J. A. ORR, Paris: There is one point to that question on which I would like to speak and that is the entertainment.

I believe if we adopt the suggestion that we cut out some of the formal social affairs it would be a much less burden to those who entertain us. This Association has gotten to be of such a size and proportion that if you meet in the smaller centers it is quite a burden on a few men to undertake these social functions, and if we meet in Louisville it makes a burden on them because of the frequency of

the meetings.

There is no member of the Association who enjoys the social affairs any more than I do, but I believe for that reason we ought to take some steps to dispense with these expensive social functions.

H. T. RIVERS, Paducah: I move to retract everything I said; I am not a delegate.

SECRETARY McCORMACK: Mr. President, I ask the unanimous consent of the body that Dr. Rivers be given the privilege of the floor and that his remarks be included, and that he be invited to make any other remarks.

PRESIDENT STILLEY: Dr. Rivers is granted that privilege and he may say what he pleases.

Any further discussion:

W. B. McCLURE, Lexington: I don't see how it is possible for this organization to presume to cut out, as you say, social features in a community in which we meet. You can't say to Dr. Dan Griffith, "You musn't invite anybody to your home." Could we pass a prohibitory law that prevented a local society to give a smoker or something of that kind?

SECRETARY McCORMACK: I am not talking about that sort. I am talking about the sort that costs a lot of money.

W. B. McCLURE: I don't see any way we have of controlling what our hosts propose to do for the Association.

SECRETARY McCORMACK: I think we should say that invitations hereafter shall include the provision that the host society shall not spend any more than \$500 in the entertainment of the profession. It would keep them from doing a lot of the things they have done in the past that I know about.

J. A. ORR, Paris: We couldn't prohibit anything as far as features are concerned, but we could let it be known that the society does not expect it and that it is the sense of the Association that those things shouldn't be.

W. B. McCLURE: In the early history of the society you remember that the local society provided everything, and by resolution we cut that all out. By resolution or by-law we have provided that all of the expenses of this meeting are borne by the society. Then we stopped that. I don't see that we can go any further.

J. T. REDDICK, Paducah: I am not a delegate but being a rather frequent attendant at state meetings, I would like to express myself.

I am thoroughly in accord with our present mode of having our meetings, one year in Louisville, one year east of Louisville, and one year in the west.

So far as the entertainment is concerned, I

think it would be better, when we meet down in this end of the state for instance, to have one real good entertainment. I remember on two occasions in Lexington, one time I was there when they had a good barbeque dinner and the other time I was there they fed us to the nth degree in a cow barn, which was one of the nicest things I ever saw. At Paducah we have given them two fine barbeques.

My experience is that the profession in these smaller places take a very great delight in entertaining the State Medical Association. We get as much pleasure out of it as you do. When you come to Paducah and we give you a good barbeque and see that you are happy, we are happy over it and I think the profession in other places is too. I am in favor of sticking to the old method.

SECRETARY McCORMACK: Mr. President, I am very much gratified. There has been a good deal of criticism and I think I brought out the fact practically unanimously that we have done very wisely in the past. Under the circumstances I had no idea of making any motion on the subject. I thought if they were kicking at the whole crowd instead of me it would make me feel better. (Applause)

PRESIDENT STILLEY: Any further business to come before the House of Delegates?

SECRETARY McCORMACK: Dr. MeChord, Councilor for the sixth district is here.

REPORT OF COUNCILOR, SIXTH DISTRICT.

R. C. McCHORD, Lebanon: I have no written report. I think, as far as I know, my district is in fairly good condition. We haven't had some meetings we ought to have had, but I think the profession in my district are pretty well all eligible doctors for members of the Association so far as I can determine but they are not as enthusiastic as they ought to be about having meetings. I must acknowledge that, and it is hard to regulate that unless we turn off some secretaries and get some more. The secretary is the man to run a county society and unless we have a good secretary we can't have a good county society, but my district is in first-rate shape.

PRESIDENT STILLEY: We passed the Councilors for several districts and we will get a report from them later on.

We will have a report of the counties.

BALLARD COUNTY.

W. A. PAGE, Barlow: We have nine in our county and we used to have twenty-six. Not longer than eight years ago we had as many as twenty-six in that county and now we have gone down to nine, and it seems to be plenty.

With roads being improved and the tele-

phone system improved, a few doctors can do as much work as a good many more a few years back. All of our doctors belong to the county medical society, in good standing. I believe that is all I have to report on.

SECRETARY McCORMACK: Bourbon County.

BOURBON COUNTY.

J. A. ORR: I have nothing unusual to report for Bourbon County. We are going along in the same old channel. We meet occasionally and have something to eat. We have latent talent there which has lapsed into a period of quiescence which revives occasionally.

SECRETARY McCORMACK: Campbell-Kenton County.

CAMPBELL-KENTON.

J. A. CALDWELL, Newport: I believe the Campbell-Kenton County has changed. We had ninety members; we now have ninety-eight. Since last year we meet at three hospitals, two hospitals in Covington where we meet alternately and one week in Campbell County. We have two meetings a month and the next meeting will be in the Covington hospital. In that way we have increased the interest some.

Interest has been somewhat lagging, it seems, since the war. I don't know why. There doesn't seem to be any strife or trouble, but there is just a lack of interest. It has been improved some since we have been meeting at the hospital instead of at the industrial club and sometimes at the court house. We have regular meetings except during July and August. We sometimes have outdoor meetings.

I don't know the number of doctors in the two counties. The great majority of them are in the society, but I don't know anything about the number of doctors—I don't suppose over 130.

J. A. ORR, Paris: There is one point of interest. We have been attempting to standardize our hospital in a way we thought would meet with the requirements of standardization. I don't know whether it was in this report or not.

SECRETARY McCORMACK: Carlisle County, Dr. Burrow.

CARLISLE COUNTY.

R. C. BURROW, Cunningham: Carlisle County can report 100 per cent enrollment of its physicians.

There have been two meetings this year at which we didn't have 100 per cent attendance for the first time in two years. There hasn't been one paper assigned that hasn't been there and been read in three years. Our meeting wasn't held at the appointed time twice this year, but on account of so much

rain and bad roads, we kept setting the meetings ahead.

We have now, through the efforts of our county society, an all-time health officer for the first time and just recently appointed. We are very proud of that. That means a health officer, nurse and a field sanitarium equipped and working in our county within the last three or four weeks. We are very proud of our little Carlisle society. (Applause)

SECRETARY McCORMACK: I want to call your attention to the fact that Dr. Burrow's report is literally a fact. That society meets with 100 per cent of its members in attendance and has had for many years sometimes more than 100 per cent because several from the outside come in. It is a good meeting.

When they went before the fiscal court for an appropriation every member of the fiscal court was in favor of it right then. We got them in Western Kentucky along the Mississippi River in a most remarkable way. The three fiscal courts met in two days, made the appropriations and the health departments were organized and going. It was so easy that when Dr. Blackerby came up he said it was a delight to go into a county where the doctors were recognized as the leaders of public opinion. He came back up there proud of those three counties. That is the fastest operation any three counties ever made in getting health departments, not only in this section of the world but in any section I expect.

CARROLL COUNTY.

B. L. HOLMES, Carrollton: The delegates from Carroll County have very little to report especially of an active nature.

In fact, I might as well say that we have a medical society in name only but for one redeeming exception and that is that we are eighty per cent in maintaining our affiliations with the state organization. I trust this fact will give us credit for not being entirely destitute of good work.

Formerly we had eighteen doctors in Carroll County. Now we have ten, eight of whom pay their state society dues promptly each year and two who are presumed to have reached that age where medical society affiliations do not appeal to them.

Regular meetings are unknown. Our last meeting was held two years ago last month and this was the result of the invigorating influence and delightful presence of our very efficient councilor who was instrumental in bringing us together on that occasion.

Barring a distressing lack of society interest, I believe our doctors measure up to the standards of the profession in most counties of the state.

SECRETARY McCORMACK: I think if

you were to feed them at that good hotel you couldn't keep them away. I would attend the meetings myself.

R. C. BURROW: I wanted to ask the doctor how old those members are that are too old.

B. L. HOLMES: I just presume they are too old from the fact that they take no interest in it.

R. C. BURROW: We have a member who will soon be ninety years old and he pays his dues regularly.

SECRETARY McCORMACK: Carter County, Dr. Stovall.

CARTER COUNTY.

J. W. STOVALL, Grayson: Carter County has eighteen doctors that belong to the society. We also have an all-time health officer functioning. We all pull together, nobody talks about the other fellow. If he does anything wrong, we don't know it.

Secretary McCormack: Daviess County.

DAVIESS COUNTY.

W. B. NEGLEY, Owensboro: Daviess County Medical Society consists of forty-five members. During the past year we have lost three of our active members, Dr. Dixon, Dr. Lockhart and Dr. Foster. We have monthly meetings with very fine attendance.

On September 14 we had with us Dr. Charles Enfield of Louisville, who gave us a very instructive paper on gastro-intestinal diseases from a radiological standpoint.

On February 26, 1927 Dr. B. F. Zimmerman, of Louisville, gave a paper on facial neuralgia and Dr. Bransford Lewis, of St. Louis, gave a paper on genito-urinal problems of the general practitioner.

At every other meeting we have dinner at the Hotel Owensboro and invite an out-of-town man to be on the program.

Our society is composed of very enthusiastic men and each one is a booster for the Daviess County Medical Society.

We have, I suppose, in our rural community about the same proposition as in most rural communities, we have very few doctors outside the city. We have about three men who are not members of our society. Just whether they are too old or not, I don't know. I have seen and talked to two of these who have formerly been members, but they don't express a very keen desire to become members again. They are not exactly what you might call active men. They are doing some work.

All of our men seem to be enthusiastic over the medical society. I don't recall a paper that has ever been given for preparation that it hasn't been gotten up. We don't have 100 per cent attendance, but we have a mighty good attendance and every fellow is pulling for the society.

SECRETARY McCORMACK: I think one

of the best tests of a county society is attendance of the business meetings. I happened to be going through Owensboro recently when they called a business meeting. I wish the members could have had the privilege of going with me. They didn't have a great deal to do but everybody was there to do it and with fine spirit. It was a real joy to be present at the meeting and see the spirit they displayed in doing unimportant details apparently. If the same spirit of enthusiasm animates them on important things it is interesting that the information we get from the Daviess County Society is very valuable.

FAYETTE COUNTY.

R. JULIAN ESTILL, Lexington: In reference to Fayette County, we had a shock owing to the death of our president, Dr. Stucky. Most of you probably knew him. His death was very sudden and was a tremendous shock to all of us, of course. I believe the doctors all rallied around Dr. Stucky.

Fayette County is in a thriving condition. We have some doctors in Lexington who do not belong to our society. As a matter of fact, I think they are really not welcome. All of those who are really eligible are members.

Our attendance is very good, our programs are always good, and on the whole I think our society is in very good condition.

SECRETARY McCORMACK: In that connection, I would like to move you, sir, that the president and secretary be instructed to convey to Mrs. Stucky our regret, at his loss, and our sympathy.

R. JULIAN ESTILL: I second the motion.

The motion was put to a vote and carried.

R. C. BURROW: In making my report, and being reminded by the other gentleman speaking of the loss of their membership, I forgot to recall the loss to our society and I am satisfied that a great many of you will miss him here at this meeting. Since the last meeting of this society we have lost a man whom we loved and a man whom we felt held our meetings together and created a friendly feeling between members, Dr. Mosby of Bardwell. I forgot to mention that.

SECRETARY McCORMACK: I am sure everybody here shares with Dr. Burrow, his profession and Dr. Mosby's family a feeling of distinct loss in his death. Dr. Mosby was really a very great man, a constant attendant at our meetings, always contributing something of value, one of our best essayists.

One of the Nestors of the Southwestern Kentucky Medical Society, where he was always present, and always a center of activity in his church, his bank and his home, he was one of those great old home makers that we all love, a great man of the old school who held almost every office in the gift of

this Association. He was county health officer in his county for many, many years, medical referee for many years, who never received any compensation of any kind other than in the sense of duty well done.

I know we can all share in the confident feeling that in that world to which he has gone he has reaped his reward for the great services he has rendered in our name. He was a very great man and a very beloved man.

C. W. SHAW, Alexandria: Campbell-Kenton County had a loss of two of their physicians during the past year, Dr. Senour and Dr. Jenkins, both valuable men in the profession.

We have also lost two other members from Campbell-Kenton County, Dr. Kelly and Dr. McCollum, both outstanding members of the profession.

SECRETARY McCORMACK: Fulton County. Dr. Alexander is the delegate.

FULTON COUNTY.

HENRY ALEXANDER, Fulton: We have a very good society in Fulton County. Heretofore we have met once in Hickman and once in Fulton. The roads have been bad constantly and we have gone two or three months without a meeting. Now that we have a hard road we can meet every month. We have only about eighteen or twenty doctors eligible and the society has gone down. They don't all belong.

JEFFERSON COUNTY.

FRANK T. FORT, Louisville: So far this year Jefferson County has had fourteen meetings and two special meetings; eleven essays; twenty cases reported.

We had two addresses by two out-of-town doctors, Dr. Coughlin, of St. Louis, who gave an address on "The Gasserian Ganglion Operation Under Local Anesthesia for the Permanent Cure of Trigeminal Neuralgia Major or Tic Douloureux;" and on February 7, Dr. Mosher of Kansas City, gave an address on "Cesarean Section."

At the close of 1926 we had 378 members and elected seventeen new members this year. There are twenty-two unpaid members and five left the city, which leaves 368 members in good standing.

We have until the first of the year to elect new members so I think Jefferson County is holding its own. The only thing that might be said is that the attendance sometimes isn't as large as it should be. I couldn't get the secretary to give me the average attendance. Sometimes we have a full hall and at other times there is a very small attendance. Of course in Louisville there are six or eight societies and some of the men attend the special societies. If they see something on the program that they feel will be good for them

to hear there is some excuse for not going to every meeting because I know if they have an eye, ear, nose and throat subject on the program I don't care to go. If Dr. Gossett has a paper I don't care to attend and there have been a good many others. (Laughter) I make that as a reason why sometimes our society is cut down, and sometimes we have a good attendance. I think everything is going nicely.

SECRETARY McCORMACK: I don't think this unseemly levity ought to be permitted to enter into the report.

The thing that surprises me in the Jefferson County Medical Society is that the leaders in the profession are nearly always there in these different specialties. They are nearly always present because they feel—as I have heard a great many of them express it—that working along a somewhat more narrowed line makes it far more important for the specialist to attend the general meeting, meetings where his particular subject is not being discussed because constantly he is finding some subject that edges into his specialty from the other man's viewpoint and for that reason there is this necessity for a constant interchange of communication between the specialties. Because, as a matter of fact, if a man becomes such a specialist that he attends and studies his particular line of activity only; he might as well be a chiropodist or chiropractor, or something. It is because we are doctors that we are specialists.

I am constantly impressed by the attendance of the Jefferson County Medical Society. I always see Dr. Fort's smiling countenance sitting in the meetings that I attend.

It reminds me very much of a story about a doctor in Warren County when they talk about these mediocre showings. During the meteoric shower in 1838, the negroes all came yelling for the master to come out because the world was coming to an end. He ran out on the back porch in a short nightgown and looked at the heavens. He picked out Orion and somebody's chair (I have forgotten whose) and some of the other things that he was acquainted with, and he said, "There is no trouble with the world. All the big ones are in their places and it doesn't make a damn bit of difference about the little ones."

You will find in the Jefferson County Medical Society that the big ones are in their places and the little ones keep coming in. After a while they get to be big ones too.

MCCRACKEN.

H. G. REYNOLDS, Paducah: I had a formal report for McCracken County but I guess I lost it between here and Paducah.

McCracken County for the past four or five years has had the same secretary. I think Dr. McChord struck the keynote when he said

the secretary is the county society. He is the man who makes the wheels go round as far as the county society is concerned.

We have in McCracken County the largest membership we have ever had. I think we have had the best meetings, as far as I can remember, that we have ever had and I think it is due in no small way to the dinner meetings that we began two years ago; I mean feeding them. It seems they will come to a medical society to sit around the dinner table and discuss matters of more or less importance more readily than they will to a formal meeting. We have had an average attendance of twenty-three members out of the forty-eight members for the past two years. I don't believe there has been a failure on the part of any of the members to come up with the program in the last two years anyway.

I think there is a certain degree of fellowship and harmony present in the society than has been before, in my recollection. Dr. Reddick is familiar with these things more than I am, and as this formal report was made up by him I am going to ask if he can supplement anything I have said.

J. T. REDDICK, Paducah: I might go a little farther and say that there has never, in the history of the society since I have been a member and that has been thirty-seven years, the fine fellowship and harmony that we have today. We have splendid meetings, and Dr. Reynolds has told you we have had an average attendance of twenty-three.

We do not meet during the hottest summer months. We meet regularly during the fall, winter and spring months. This year our meetings have been unusually interesting. We have had several splendid speakers; we have had essayists from abroad.

We have had, as Dr. Reynolds has told you, a medical society dinner at every meeting. In March we had the very great pleasure of having Dr. McCormack and Mrs. Cormack and Mrs. Stilley, secretary and president of the state Woman's Auxiliary, when the county society Auxiliary was organized and that was a ladies' night meeting. Most of the doctors, even those way out in the country, brought their wives. We had a fine time and some fine speeches from Dr. McCormack, Mrs. McCormack and Mrs. Stilley and one or two others.

We had the reporters of the newspapers and I want to take occasion to mention the daily newspaper reporters. We have two daily newspapers and they allow me to write the notice of our society and never fail to say what I ask them, and sometimes more.

During the year our Riverside hospital has been standardized. However, in today's paper I didn't see the name of that society mentioned. I don't know whether the standard-

ization has been completed or not. At any rate, the Riverside Hospital, under the influence of the county society, has endeavored to standardize that hospital.

I want to say that our doctors are all busy, they are too busy to fuss any more and there is no antagonism. There is a fine spirit and our doctors, so far as I know, are happy, contented and hard at work, and we have the best lot of doctors and the best county society in the country. (Applause).

SECRETARY McCORMACK: Christian County, Dr. Gary.

CHRISTIAN COUNTY.

W. E. GARY, Hopkinsville: We have had a very good year. Every doctor in the county who is a regular practicing physician is a member of the society. We have thirty-seven members. We have invited one of the counties to meet with us and we have an average of between forty-five and fifty doctors at every meeting we have held this year. We had one meeting with Clarksville last month. Our county society went over there and met with them.

Everything is going along very nicely. We haven't had very many fights and we are getting along all right.

SECRETARY McCORMACK: Pendleton County, Dr. Brown.

PENDLETON COUNTY.

O. W. BROWN, Foster: Mr. President, I have a rather sad report from Pendleton County.

As one of the other doctors expressed himself a while ago, (I don't know who it was) Pendleton County, up to the late war, was considered second to Harrison County and we think Harrison County has a very excellent society.

We were disorganized during the war and I think two of the doctors died about that time. Previous to the war I think we had twenty-one doctors in the county. We had excellent meetings, good attendance and harmony among all the members, but during the war we were disorganized and since then have reorganized several times and immediately disorganized. I think we now have ten doctors. Half of them are inactive, or semi-active at least, and if there are any of you who have any salvation or anything you can do to put Pendleton County on the map in the way of a medical society I would be mighty glad for you to suggest something. Dr. Shaw, our councilor, I believe is a mighty good man and probably will do something for us. I know he will try. But that is the situation.

There have been no deaths in the last year. There has been one removal just recently, but at this time we still have ten men in the county and I will say half of them inactive.

SECRETARY McCORMACK: In my of-

fice I have a couple of representatives from Pendleton County, and they constantly tell us that while the number of doctors has gradually decreased it has concentrated the effectiveness of the whole bunch and the mantle of their elders has fallen on them. They are constantly expecting great things from Pendleton County and I hope very much Dr. Brown will go back and invite them in to the same sort of dinner he has been eating and I think it will get religion in the crowd.

SHELBY COUNTY.

GRAHAM LAWRENCE, Shelbyville: We formerly had thirty-two physicians in the county; today we have eighteen. We meet the third Thursday in each month, have a dinner with all the members of the society present, except two.

PRESIDENT STILLEY: Is there any further business to come before the House of Delegates?

If there is nothing further, the House of Delegates will adjourn until eight o'clock tomorrow morning.

The meeting adjourned at eight-thirty o'clock.

THIRD SESSION, TUESDAY MORNING, OCTOBER 4.

The meeting convened at eight o'clock, President Stilley presiding.

PRESIDENT STILLEY: The House of Delegates will please come to order.

SECRETARY McCORMACK: This is the report of the Committee on Military Medicine, Garland Sherrill, Chairman.

The Surgeon General has invited the State Medical Associations to appoint a Military Committee with the view of creating a better understanding of the Medical Department Reserve Corps project in securing the enrollment of desirable physicians, also as a liaison through which he can communicate with the State Medical Association.

"The records indicate that as of September 15, 1927 the State of Kentucky had in the Medical Reserve Corps 209 officers. They are distributed in grade as follows:

Colonels	8
Lieutenant Colonels	18
Majors	58
Captains	57
1st Lieutenants	68

"During the period, September 15, 1926 to September 15, 1927, there were only eleven new accessions to the Medical Reserve Corps from the State of Kentucky. In view of the past history of your state and its contributions of man-power in support of the national government and the further fact of its importance in the training and education of the medical profession, it is not believed that your Association should be satisfied with this showing. It is, therefore, believed that your Association can be of most value in the mat-

ter of national preparedness by bringing to the attention of the members of the medical profession their duty to their country which can be manifested by affiliating themselves with the Medical Reserve Corps.

"Each member of this Association is earnestly urged to aid in obtaining young men to join the Medical Officers' Reserve Corps, and your Committee feels sure that, as in the past, this call will meet the proper response."

I move the adoption of the report, Mr. President, with the general request on the part of the Association that our members enroll in the Medical Reserve Corps. Enrollment is not an idle thing. It is a very valuable thing.

The post-graduate courses that are undertaken by the Medical Corps of the Army are of very great value and the members really get something for their service in it.

One of the most delightful vacations one can have is the two weeks' course at the Carlisle Military barracks in the summertime. It is nice to go there, it is a nice place, they have delightful post-graduate work that is very effective and instead of having a man worried about what the cost of his vacation will be and where it is coming from, he is paid by the army and gets a considerable amount of comfort from that fact.

L. H. SOUTH: Are women physicians eligible for this?

SECRETARY McCORMACK: They are naturally in the war department. They don't have to enroll.

R. JULIAN ESTILL, Lexington: Is the service at Camp Knox compulsory for every member of the Reserve Corps?

SECRETARY McCORMACK: The member of the Medical Reserve Corps is required once during his four-year term, and before he is eligible to promotion, to spend one or two weeks somewhere. Nearly all the medical men are going to Carlisle barracks, or going somewhere, every four years and spend two weeks in the course.

The motion was regularly seconded, put to a vote and carried.

SECRETARY McCORMACK: Mr. President, I have here a bill that I want to ask be spread on the minutes and referred to the Committee on Legislation for further investigation. It is a bill to provide for the sexual sterilization of inmates in institutions in certain cases. It follows along the line of the recently enacted statute in Virginia which has been upheld by the Supreme court of the United States and is a matter of very considerable importance.

It has been sent to us by Dr. Nolan, one of our Vice Presidents, with the approval of the Harlan County Medical Society. It is a matter of very great importance. I believe it

should be very carefully considered with a view to its introduction in the general assembly if this particular bill, or some modification, or similar bill, be approved.

"A bill to provide for the sexual sterilization of inmates of state institutions in certain cases.

"Whereas, Both the health of the individual patient and the welfare of society may be promoted in certain cases by the sterilization of mental defectives and habitual criminals under careful safeguard and by competent and conscientious authority, and

"Whereas, Such sterilization may be effected in males by the operation of vasectomy and in females by the operation of salpingectomy, both of which said operations may be performed without serious pain or substantial danger to the life of the patient, and

"Whereas, The commonwealth has in custodial care and is supporting in various state institutions many defective and habitually criminal persons who if now discharged or paroled would likely become by the propagation of their kind a menace to society but who if incapable of procreating might properly and safely be discharged or paroled and become self supporting with benefit both to themselves and to society, and

"Whereas, Human experience has demonstrated that heredity plays an important part in the transmission of insanity, idiocy, imbecility, epilepsy and crime;

"Be It Enacted by the General Assembly of Kentucky:

"1. Whenever the superintendent or warden of the state's reformatories or hospitals for the insane or feeble minded shall be of the opinion that it is for the best interests of the patient or inmate and of society that any inmate of the institution under his care should be sexually sterilized, such superintendent or warden is hereby authorized to cause to be performed by some capable physician or surgeon the operation of sterilization on any such patient or inmate confined in such institution afflicted with insanity, idiocy, imbecility, feeble mindedness, epilepsy or habitual criminality, provided that such superintendent or warden shall have first complied with the requirements of this act.

"2. Such superintendent or warden shall first present to the trustees or managers of his hospital or reformatory a petition stating the facts of the cause and the grounds of his opinion, verified by his affidavit to the best of his knowledge and belief, and praying that an order may be entered by said trustees or managers in their order, upon the inmate of his institution named in such petition, the operation of vasectomy if upon a male and of salpingectomy if upon the female.

"A copy of said petition must be served

upon the inmate together with a notice in writing designating the time and place in the said institution, not less than thirty days before the presentation of such petition to said trustees or managers when and where said trustees or managers may hear and act upon such petition.

"A copy of said petition and notice shall also be served upon the legal guardian or committee of the said inmate if such guardian or committee be known to the said superintendent or warden, and if there be no such guardian or committee or none such be known to the said superintendent or warden, then the said superintendent or warden shall apply to the Circuit court of the county or city in which said institution is situated, or to the judge thereof in vacation who by a proper order entered in the common law order book of the said court shall appoint some suitable person to act as guardian of the said inmate during and for the purpose of proceedings under this act, to defend the rights and interests of said inmate, and the guardian so appointed shall be paid by the said institution a fee not exceeding fifteen dollars as may be determined by the judge of the said court for his services under said appointment and such guardian shall be served likewise with a copy of the aforesaid petition and notice. Such guardian may be removed or discharged at any time by the said court or the judge thereof in vacation and a new guardian appointed and substituted in his place.

"If the said inmate be an infant having living parents whose names and addresses are known to said superintendent or warden, they or either of them as the case may be shall be served likewise with a copy of the said petition and notice aforesaid.

"The said trustees or managers may receive and consider as evidence at the said hearing the commitment papers and other records of the said inmate in any of the aforesaid named institutions as certified by the superintendent or warden thereof, together with such other legal evidence as may be offered by any party to the proceedings.

"Any member of said trustees or managers shall have power to administer oaths to any witnesses at such hearing.

"Depositions may be taken by any party after due notice and read in evidence if otherwise pertinent.

"The said trustees or managers shall preserve and keep all recorded evidence offered at such hearings and shall have reduced to writing in duplicate all oral evidence so heard to be kept with its records.

"Any party to the said proceedings shall have the right to be represented by counsel at such hearings.

"The trustees or managers may deny the

prayer of said petition or if they shall find that the said inmate is insane, idiotic, imbecile, feeble minded, epileptic or habitually criminal, and by the laws of heredity is the probable potential parent of socially inadequate offspring likewise afflicted, that the said inmate may be sexually sterilized without detriment to his or her general health, and that the welfare of the inmate and of society will be promoted by such sterilization, the said trustees or managers may order the said superintendent or warden to have performed by some competent physician to be named in such order upon the said inmate, after not less than thirty days from the date of such order, the operation of vasectomy if a male or of salpingectomy if a female; provided that nothing in this act shall be construed to authorize the operation of castration nor the removal of sound organs from the body.

"3. From any order so entered by the said trustees or managers the said superintendent or warden or the said inmate or her committee or guardian or parent or next friend shall within thirty days after the date of such order have an appeal of right to the Circuit court of the county or city in which the said institution is situated, which appeal may be taken by giving notice thereof in writing to any member of the said trustees or managers and to the other parties to the said proceeding, whereupon the said superintendent or warden shall forthwith cause a copy of the petition, notice, evidence and orders of the said trustees or managers certified by the chairman or in his absence by any other member thereof, to the clerk of the said Circuit court who shall file the same and docket the appeal to be heard and determined by the said court as soon thereafter as may be practicable.

"The said Circuit court in determining such appeal may consider the record of the proceedings before the said trustees or managers, including the evidence therein appearing together with such other legal evidence as the said court may consider pertinent and proper that may be offered to the said court by any party to the appeal.

"Upon such appeal the said court may affirm, revise, or reverse the orders of said trustees or managers appealed from and may enter such order as it deems just and right and which it shall certify to the said trustees or managers.

"The pendency of such appeal shall stay proceedings under the order of the trustees or managers until the appeal be determined.

"4. Any party to such appeal in the Circuit court may within thirty days after the date of the final order therein apply for an appeal to the Court of Appeals which may grant or refuse such appeal and shall have

jurisdiction to hear and determine the same upon the record of trial in the Circuit court and to enter such order as it may find that the Circuit should have entered.

"The pendency of an appeal in the Court of Appeals shall operate as a stay of proceedings under any orders of the said trustees or managers or of the Circuit court until the appeal be determined by the said Court of Appeals.

"5. Neither any of said superintendents or wardens nor any other person legally participating in the execution of the provisions of this act shall be liable either civilly or criminally on account of said participation.

"6. Nothing in this act shall be construed so as to prevent the medical or surgical treatment for sound therapeutic reasons of any person in this state, by a physician or surgeon licensed in the state, which treatment may incidentally involve the nullification or destruction of the reproductive functions."

I move it be referred to the Legislative Committee with power to act.

The motion was regularly seconded, put to a vote and carried.

PRESIDENT STILLEY: Report of Committee on Medical Education, Dr. Jenkins.

W. A. JENKINS, Louisville: Mr. President and Members: "Your Committee respectfully submits the following tentative statement of principles. Therefore be it

Resolved: First, That the slogan of modern medicine is *Prophylaxis*. Accordingly this Society congratulates our State Board of Health on its previous achievements and pledges the confidence and support of this society in all of its future activities. We feel that our endeavors should be continued until every county in the state of Kentucky is equipped with a full time county health officer.

"Second. That this Society is deeply concerned for and should take an active interest in our own medical school and in all legislative matters which affect our school and medical practice in our state.

"Third. That it is the sentiment of this body that the prime object of our medical school should be to equip and graduate good general practitioners of medicine, primarily for the benefit of the people of our own state and secondarily for the benefit and advantage of those young men and women who may desire to avail themselves of the facilities which we offer.

"Fourth. That we deplore and regard as unwise and unsafe the wholesale tendency of our recent medical graduates to rush into specialties without adequate preparation for same. We feel that the manner of taking up of specialties should be regulated and supervised by the medical schools or by legislative enactment. It would perhaps be better for

each medical graduate to do general practice for five years or its equivalent in accredited hospital work before allowing said graduate to practice as a specialist.

"Fifth. Regarding the question of full-time teachers in our medical schools, we feel that for certain branches the full-time teacher is a necessity. However, as far as the clinical branches are concerned, we feel that the outstanding experienced and reputable clinicians of the locality in question should be the chief factors in determining the amount and character of work necessary to obtain a medical degree; likewise that the bulk of the clinical teaching should be directed by, and in a considerable part done by, prominent clinicians, men actually engaged in the practice of medicine.

"Sixth. We feel that the policy and the management of a medical school should in the main be determined and carried out by doctors, rather than by professional educators or as a rule are academic men without medical education or even adequate understanding of the medical needs of the community in which the particular medical school is located.

"Seventh. We feel that the members of this Association owe it to their constituents, their people, the citizens of their locality, to keep themselves informed on all medical legislative measures, (proposed or actually in force) and to instruct or inform fully said people or citizens regarding such legislation in order that an intelligent vote or expression of opinion may be registered.

"Respectfully submitted,

W. A. Jenkins, Louisville

C. A. Calvert, Scottsville

J. A. Caldwell, Newport."

P. E. BLACKERBY, Louisville: I move we adopt the report.

The motion was seconded.

SECRETARY McCORMACK: I move that it be read at one of the largely attended sessions. I believe this report is of such moment it should be brought to the attention of the entire profession.

P. E. BLACKERBY: I will include that in my motion.

The motion as amended was put to a vote and carried.

PRESIDENT STILLEY: Any new business?

L. H. SOUTH: I had a very interesting experience with a form of religion that I do not admire, but they have one thing that I really appreciate. They say that when they meet a person face to face and don't show them the light, as they call it, the burden of their damnation is on their souls.

I think when a doctor meets a person, goes into a home and doesn't give out his knowledge to the whole family, the burden of the illness of that family is on that doctor's soul, and I think that is the one thing that this religion has taught me, and it is yours too.

When you meet a person in your practice who has bad teeth or tonsils, it is your duty to advise their removal.

In the city of Louisville we have one of the biggest wholesale houses in the United States, and the last five years three of the heads of those departments have died and one of them, my very special friend, was an invalid for a number of years in spite of the fact that I had been telling and telling him that he should go on a diet and put himself under the care of a doctor. He didn't do it.

But if heads of big business would have themselves physically examined and all their employees and live according to the rules of health, there would be a great deal less sickness and ill health.

How many doctors and how many people know the real value of good food? Whenever you eat a piece of white bread you are simply taking away from the ingredients of wheat fifteen or sixteen elements that are needed in your body. But where can you get whole wheat bread. You can't buy it. It is nothing but bran and white flour mixed. When you eat vegetables cooked with grease you have lost all the vitamins in the grease. When you eat more than 120 grams of meat a day it means that every organ in your body has to go to work to eliminate it.

You can take a rabbit and put it on a meat diet and in a short time arteriosclerosis will develop. All these problems have been demonstrated by scientists but they have not reached the doctors.

I once read an article as to how long it took an idea to travel from place to place. This article was on glasswear. It was 100 years before other people could make it within a radius of 200 miles. So with medical knowledge. Some of these things have been known since the time of Socrates and Plato and yet it has taken us all these years to find them out.

Plato speaks of the sterilization of the unfit. That was 2000 years ago and we still have those same problems with us.

Take the question of the spread of the various diseases. Most all of our diseases come from human beings. On this question of infantile paralysis that we are struggling with now, those germs have no wings and can not fly, they are transported from one patient to another. It is a germ of some kind.

I think one of the most prevalent ways of communicating diseases is through hand-shaking and through the use of common utensils we eat from in various public places. It was proven at the cantonments during the influenza epidemic, that a great deal of the influenza was due to the lack of proper washing of the dishes, that when they didn't wash them through live steam the organisms could be recovered in the dish water.

We find that the tuberculosis germ can be found on doorknobs and dishes.

I think it is our duty to spread this gospel of health which we all knew so well and make it public knowledge. There is no reason in the world for you to have all this knowledge in your head and not give it out. You can have a bottle of quinine and put it on the mantelpiece and never cure a case of malaria unless it gets into the patient's system.

We have knowledge that has been known for years and years. We have gotten nothing new in medicine or disease. We can go back and find out what they said about bubonic plague if you read the Sanskrit it describes the rats that carried the plague. In the middle ages, when artists depicted the plague, they would also have in one corner a dead rat with his feet up showing in that time they recognized the rat had something to do with this plague. Back at the time the Sanskrit was written there was an association between the rat and the plague and yet it wasn't common knowledge and it never did dawn on us until recent years that the rat did carry it.

The same way with the treatment of leprosy. We thought we had gotten something new when we got chaulmoogra oil but the Chinese had been using it for centuries.

All this past knowledge, and the knowledge we are accumulating now is not going to do any good unless it is spread around and becomes universal.

One way to make it universal is to get our medical schools to make the medical courses far more practical and teach the doctors things that are going to be of some service to them.

I understand you have to memorize the chemical formulas of sixteen amino acids before you can pass a chemistry examination. What good is that going to do any practitioner or to memorize all those formulas? I know that is true because I took this course in chemistry and I have been practicing for twenty-eight years and was a fairly good doctor when I was a practicing physician. I cleaned up many a patient's mouth and tonsils in those days and nobody knew anything about it. If I did nothing else but that one thing, I feel I have served some purpose, but I never had to use

those fifteen or sixteen different formulas.

It is well to know that proteins do break down in all these amino acids and you don't have to have a specialist spending hours trying to learn that when there are so many other things of far more importance.

The young men going out in the world must be taught the little things in life that mean so much, the value of food, the value of sunshine, the value of taking sun baths. The greatest therapeutic value in the world is the sun baths you can get right in your own home; and the hot and cold showers.

Only sixteen per cent of the illnesses of life demand a specialist and when they do need them, they need them badly. I know that from a personal experience. For six years I was a terrible invalid and I couldn't get a person in the world who could tell me what happened. If any body should get good medical attention, I should have but I couldn't get it. I almost died before I could get someone to look at a little thing in my mouth. I had an abscessed tooth.

So the small things are what we have to watch for.

Another thing you ought to clean up are your offices. Go into the ordinary doctor's office and you will find it is unhygienic, he has never cleaned up his desk or spittoons, or anything at all. You should start out to be an example in the community. If you don't lead in health matters somebody else will lead for you. We have to clean up our own mouths, have good teeth.

I met a doctor downstairs, a fine looking doctor, and I asked him how he looked so well. He said, "I have in my house whole wheat bread, milk and raw vegetables." He eats this diet.

Remember in Frankfort when Dr. Goldthwaite brought a man to the state medical meeting, a man of sixty years old and he looked as though he were a man of forty-five. He attributed it to his posture and diet.

We sit down all humped over and we don't get the breath of life into our bodies. We should be a walking example of health. It is something you have to study.

The practice of medicine has changed considerably and the more we have preventive medicine the more we have to be leaders in it. I wish you would all read that article I spoke about in the *Atlantic Monthly* about the cost of illness. There are 2,500,000 people sick every year and the current expense of these ordinary illnesses that can be prevented. The Metropolitan Life Insurance Company has written a great deal about it and I think our hope in the present civilization is caring for the individual.

You know so many scientists tell us that we are at the crossroads of whether our civilization is going to endure or not. It is because we are breeding so many unfit people, and the people of the upper walks of life are not as numerous as the people of the lower walks of life. You can get history right in our own state, of grandparents, parents and grandchildren all being in state institutions at some time or other. We know all these things, but they have to be universal knowledge.

Everything we know has to be made universal and we must preach that though the medical students and through our schools.

As the English say, while I am on my legs I would like to say that we wish we could meet the senior medical students and tell them about the aims and objects of the Kentucky State Medical Association, get them interested so that when they graduate they will want to become members of the respective county societies, and be trained the right way. I would like to have that duty devolve upon me. (Applause)

PRESIDENT STILLEY: Any new business:

W. E. GARDNER, Louisville: I understand Dr. Fort made a report on Jefferson County to the House of Delegates yesterday.

I think the fifth district is composed of Jefferson County and seven or eight counties immediately east of Louisville. They have been going along in a very healthy sort of fashion during the past year. I have been able to attend most of the county society meetings, not all of them, and I think the membership for the district has held up almost to that of last year, perhaps about even.

The report as published in the state JOURNAL shows a loss of three or four at the time that publication was made, but there have been some additional members who have come in since that time.

We have no large district society in this group outside of Louisville. In the past two years, however, we have had what we call a tri-county meeting up in the counties of Carroll, Owen and Gallatin, meeting one year at Sparta and another year at Owenton, and we hope to have a meeting, perhaps next year, at Carrollton. At these meetings we have had a good attendance and quite a good deal of interest.

We usually have one or two men go out of Louisville at the invitation of the local society in one or more of the societies in this group and we have had quite a good deal of interest. I think the general feeling of the profession, as far as their relation to each other, is very satisfactory.

SECRETARY McCORMACK: Mr. Presi-

dent, Dr. Abell, in discussing the appointment of the committees this year, selected Dr. Scott of Lexington as chairman of the Committee of Medical Ethics. He was selected for a distinct purpose.

At Crab Orchard two years ago, Dr. Scott made a report on medical ethics in which he discussed the question of, not the chronic prescriber or chronic user of alcohol, but of the reputable, upstanding members of the profession prostituting the privilege given them by law in using alcohol for medicinal purposes, getting six quarts for prescriptions and using them for beverage purposes thereby setting apart members of the medical profession as a privileged class. They are using, misusing, a legal provision given them for the benefit of sick people, in so far as alcohol is useful to sick people, on which many of us disagree.

The House of Delegates, at that meeting, unanimously approved the report of that Committee. The Council, for the last three years, has re-emphasized the contents of that report. Dr. Scott feels that having said this thing, and having had the unanimous adoption, which to a very considerable extent has been neglected, he has done his duty in the matter. He probably has, and yet I don't believe we should let the occasion pass without at least calling the attention of the profession to the stand of the organized profession on this subject.

I have always been very happy over the fact that this Association was the only organization in medicine that protested against the adoption of the Eighteenth Amendment in the words and terms in which it was adopted when it came to saddling on the profession the responsibility for the distribution of alcoholic beverages. If they are going to prohibit it, prohibit it. That was the attitude we took when this resolution was before Congress. I have always been proud of that fact.

I know of my own knowledge that a number of fine, young men who graduated from the university the last few years have found it so much easier to prescribe a beverage, the contents they know fairly well, than to practice the complicated profession that has been honored by so many of our leaders in the past. They have fallen into doing that sort of thing.

I believe we should reiterate our stand on the matter. It seems to me that it is extremely important that we make it clear that the privilege given by law to medical men to prescribe liquor was given for the purpose of prescribing it for patients actually under their control, who were examined by them and the prescriptions written because that medication was indicated and they needed it; that the whiskey permitted to be withdrawn by the doc-

tor is withdrawn for the purpose of administration to sick people and for no other purpose. As educated, trained leaders of the profession, we haven't a right to use that stuff for any other purpose than for indicated illness, and I think we can't re-emphasize it too often.

We now have in this state some sixty men under indictment, or in prison, or undergoing trial for violation of this law, and as long as the leaders in the profession themselves violate the law there is no possibility of getting those members of the profession who are not so well trained, and do not understand the ethics of the matter so well, to do the correct thing and they are going to get caught. They are caught largely by being misled.

I don't believe this matter can be reiterated too often, and I think it is my duty to call this to the attention of the profession again at this time so that something can be done about it, because we are going to be made or broken on this proposition. It is no idle question.

There is not the slightest doubt on the face of the earth that this government is going to enforce this amendment. It has got to do it or go to pieces. There is no question that in its enforcement we have a particular duty because we are the only ones exempt by the provisions of an absolutely arbitrary law. We are, in a sense, agents of our government and every time we violate the law ourselves we are helping to break down the government that we all want to support. We don't realize it, of course; if we did we wouldn't do it.

But to get us to realize, I believe the matter should be emphasized over and over again in the county societies until we have stopped this evil practice that is bringing us into disrepute. Every man on the street feels that doctors are having access to liquor and nobody else. You can hear the cab drivers talk about it, barbers in the barber shops, and when a doctor comes in they talk jokingly with him, about the possibility of getting a prescription.

There should be no joking about it. It is a serious matter and we ought to hold ourselves as guardians of the public right in this matter and help to lead our people along the lines of law enforcement and obedience to law in this matter as in all other matters. (Applause)

PRESIDENT STILLEY: Any new business?

J. A. ORR, Paris: The insurance business was to come up today, wasn't it?

SECRETARY McCORMACK: A matter of unfinished business is before the House on the proposition made by Major Byars in regard to group insurance for indemnity for malpractice and fleet insurance for automobile liability.

I don't know whether I can state the terms or not. We have it in writing here, but the proposition is that we undertake to approve the solicitation of our members for insurance under a group plan under which those of them who take the combined indemnity insurance against malpractice and automobile insurance, will save somewhere from eight to eleven dollars on each combination policy taken. I believe that is about the size of it.

Under the proposed plan, as I see it, it would slightly increase the cost of liability insurance against malpractice and slightly decrease the automobile insurance.

If anybody is very much in favor of this plan, I hope he will speak to it, too, because it doesn't appeal to me especially. I am in some doubt whether it is a good thing for us to do because we have tried a number of different times to solve that problem by mutual agreement among ourselves, that we would each contribute fifteen dollars toward a fund that would be kept as a guarantee fund or as a reserve fund for the purpose of indemnification of members unjustly mulcted for malpractice. That has been tried two or three different times.

It would cost us three dollars a year, after the first year, to maintain such a fund if our experience in the future is that of our experience in the past. I mean it wouldn't cost more than three dollars a year. For the life of me, I can't see any reason for paying twenty-eight dollars for a thing that costs only three dollars. If the profession is not going to do one, I think the profession ought to do the other. While it will cost us nine times as much as it ought to to do this, we will still save something by it. I don't think we ought to throw our money to the winds unnecessarily.

What I would like to do would be to undertake the actual collection of fifteen dollars a piece from at least 1000 of our members so that we may start a reserve fund and after the first year pay in only as much as has been taken from the fund during the previous year. In that way we could still build up a reserve fund of practically \$30,000 which is considered enough for the care of the whole undertaking.

W. E. GARDNER, Louisville: Was this plan of insurance advocated by Major Byars submitted to the House of Delegates?

I am sorry he is not here. That was made to the Jefferson County Society and Dr. Palmer went into the question. The names of all the policyholders were to be included in a blanket policy. By doing this there was some reduction in the regular rate. Still, even with that reduction, the rate was no less than other reputable companies, the one par-

ticularly that has been carrying a good many of the members in this state for a good many years. There were several features about the matter where in cases of liability the obligation of the different doctors to each other was pretty closely tied up so that in the event of damage suits, and so forth, we felt there might be some certain embarrassment if the doctors went on the stand to testify on behalf of each other on account of the society paying in a small amount for the medical defense.

We studied the thing exhaustively and received reports from other state medical societies where they had gone into it. On the whole they felt it was not a very safe proposition.

I believe the doctors should feel free and not be tied up to any one particular insurance company. They should have the privilege of carrying their insurance in one company or the other as long as this plan of Dr. McCormack's has been advocated for several years has not become a working plan. I think if it could have been put into effect as he advocated, and a sufficient number of men had gone into the thing, we might have organized a mutual protective society that could have been worked out very well. It seems that that hasn't been popular, and as long as that isn't in effect, I think it is up to the men to carry some insurance in some reputable company.

I know Major Byars and like him personally very much, and I am sorry that his plan hasn't appealed to our members more heartily than it has.

R. JULIAN ESTILL: I agree with Dr. Gardner. It doesn't seem to me that we are gaining very much by Major Byar's plan. My own feeling in the matter would be that probably we haven't pushed the idea that Dr. McCormack has suggested as hard as we might, and I think oftentimes a thing of that kind done through general headquarters, where they are busy with so many other things, isn't pushed as hard as it might be if referred to a special committee.

My suggestion would be that we have a special committee this year to push the matter and see if we can't put across this proposition that Dr. McCormack is interested in, pay the money into our own fund rather than support some other company.

There is another element of danger, it seems to me, in Major Byar's plan and that is in the company that I happen to carry my indemnity insurance at the present they notify me at a safe time before my policy elapses, and if my check is there at that time my policy is automatically continued.

There might easily be a lapse of a few days or a week or two in a proposition of this kind

that might be at the very time when we would get into trouble and some technicality would arise.

It seems to me if we would have a committee on insurance we could ask them to get active and see if they couldn't get this fund started. I don't believe there is any doubt of getting 1000 or 1500 members in the state interested in this proposition. Let's give it a chance and see what we can do. If we can't do anything, next year perhaps we might find some other way of solving it. Major Byar's plan does not appeal to me personally.

J. A. ORR, Paris: This plan as submitted by Major Byars, as I see it, is not in reality group insurance in any sense whatever. He comes here and asks this society to merely endorse this particular company to solicit the members of this society at a great deal higher rate than we are getting insurance at the present time. He wants twenty-eight dollars and some cents for the same protection that we get for twenty-one dollars now, and he wants the society to endorse his company that he may go out and solicit in the name of the Kentucky State Medical Association and solicit the members for this particular kind of insurance.

Group insurance implies that you take a certain number of men at a reduced figure. He doesn't make any proposition whatever as to the whether he will give a certain rate for 500 men or 1000 men, or any number of men. All he wants is the endorsement of the society that he may go out and solicit the members under a sort of blanket proposition which, in fact, is no more than an individual policy at a higher rate than we are paying at the present time, with no more insurance nor any more protection. He has no more advantageous clauses in his policy than we have at present in the one which most of us carry, and it seems to me it would be very unwise to approve a thing of that kind. It would be an unbusinesslike proposition, it seems to me.

As far as the automobile insurance is concerned, that is an entirely different proposition. It is conducted through an entirely different company and he hasn't given us any rates on what our automobile insurance would be.

He says we will have a reduction of eleven dollars on an automobile policy. His figures are quoted on Louisville only. The majority of the doctors in the state don't live in Louisville and the reduction wouldn't be nearly so much that according to his own statement. We have no figures on the automobile insurance whatever outside of Louisville. I think it would be very unwise, indeed, to approve any such plan.

I do want to endorse Dr. Estill, and at the

proper time I would like to make a motion that the incoming president appoint a committee to refer that to.

J. W. SCOTT, Lexington: Mr. President, it seems to me that while it is necessary for us to enter into more or less cooperative work, that if the Association sticks to scientific medicine to make better men in practice, the better off we are going to be.

If the man in the insurance business can make a profit while we go ahead and try to make our profits by being doctors, and better able to take care of our patients, I think we will make enough additional money to let him make his additional profit.

This is about the same thing that the farmer is up against. Farmers are always groping around and stumbling over projects to do cooperative things, and trying to get his supplies without paying what he considers terrible profit to some merchant. The result is that they usually get stung.

I feel that the medical society is in much the same position. It is news to us that somebody should charge twenty-eight or fifty, or whatever number of dollars it takes to get an indemnifying policy for malpractice or a policy for automobile insurance, yet the competition in business is so great that if they were making an extraordinary profit some other company would come along and take the business away by cutting the price. I don't think the policies are so extraordinary that we should make such a strenuous effort, by cooperative work, to organize our own defense. (Applause)

PRESIDENT STILLEY: Does any member want to make a motion in regard to this group insurance that Major Byar has presented? There wasn't any motion, as I understand it.

J. A. ORR: I would like to make a motion that the incoming president appoint a committee to carry out the suggestions that have been made from the floor, that we do continue an effort to establish a mutual company.

I don't altogether agree with Dr. Scott's statement that we should all be so absorbed in scientific medicine as to forget our bread and butter affairs. There is no reason why we shouldn't be business men the same as other men, and if we can better ourselves economically it doesn't interfere with our scientific medicine to organize ourselves and attend to the business of our own ordinary affairs in an economic way.

The motion was regularly seconded, put to a vote and carried.

PRESIDENT STILLEY: Report of Medico-Legal Committee, Dr. Lukins.

REPORT OF THE MEDICO-LEGAL COMMITTEE.

J. B. LUKINS, Louisville: Since my last

report there have been three doctors sued for malpractice in the state. Since last year we have not lost a case.

This is the first time since I have been on the committee that we haven't had some real trouble. Everything is going along real well and, as somebody has expressed it, I don't see any use in changing unless we better ourselves. Unless we get a policy that covers more and we get a better rate, we had better stay where we are.

In a great many of these cases there is a good deal of excitement and scare when the suit is first brought, but that is the last we ever hear of it. They just gradually die out, and time heals a great many things. It is very rare that this doctor is ever put to any more trouble than when the suit is first filed.

I didn't hear Major Byar's proposition, but I am inclined to think that we can better study the matter a little further before we undertake any blanket insurance.

The objection has been raised to the idea of raising a fund and having the Kentucky Medical Association handle the matter. That would be a bad thing because that would be something for the lawyers to shoot at.

Personally, I doubt that that objection is well founded because if this is properly organized and managed we could have a mutual insurance that would work out to our welfare. I therefore favor the appointment of this committee. The committee can get down to real work, investigate it and see what can be done.

PRESIDENT STILLEY: We will now finish up the reports of counties. I will first call for the report of Henderson County.

G. W. WHITE, Henderson: "We beg leave to submit the following report of the Henderson County Medical Society for the year of 1927.

"From lack of interest of the profession in the county, the number of meetings of the society and the attendance has not been what we should have liked. We have nineteen paid members.

"The chief activity of this society has been the establishing of an all-time health unit for the county. The aid and cooperation of the Henderson Rotary and other civic clubs was an important factor in this work.

"Beginning operation July 1, 1927 the all-time health unit has Dr. F. C. Campbell, Health Officer, in charge, a well equipped laboratory with a competent technician, two nurses and a sanitary inspector. They have done much valuable work and have the ground work laid for a more successful accomplishment in the future.

"In their effort to control the prevailing infantile paralysis epidemic they have been the first in this section to close the schools,

with the result that only four cases have been reported and with two deaths."

PRESIDENT STILLEY: McLean County, Dr. Spicer.

W. W. SPICER, Calhoun: "The McLean County Medical Society has a membership of seven members. There are seven paid up members in the county. There are at present nine doctors in McLean County.

"Our beloved president of the McLean County Medical Society died a few days ago. Dr. Alph Ayer, Greenville, Kentucky, died on the twenty-sixth of this month.

"The County Medical Society is still functioning although we do not have a meeting very often. A few of the members of the county society visit the Daviess County Medical Society regularly. As a rule the McLean County Medical Society is very enthusiastic in the public health work. Recently there has been appointed in McLean County an all-time public health officer and a sanitary inspector. Dr. J. S. Fitzhugh is our all-time health officer, and Mr. Hubert White, Owensboro, is our sanitary inspector."

PRESIDENT STILLEY: Report of Taylor County, Dr. Atkinson.

W. B. ATKINSON, Campbellsville: "Since the last state meeting the Taylor County Medical Society has held joint meetings with the societies of Adair and Green counties, the place of meeting alternating between the three counties. Meetings have been held each month with one or more papers at each meeting.

"At our annual meeting and banquet in December, Drs. Irvin Abell and Raymond Evans delivered essays. In June an all-day meeting was held at which time most excellent papers were delivered by Drs. R. Julian Estill, W. Edgar Fallis and R. Hayes Davis. The Marion County Society was present with us on this occasion. Other visitors at our regular meetings were: Drs. Page of Indianapolis, Boldrick and Crenshaw of Lebanon, Johnson of Louisville, Tucker of Elkhart, Kansas, Miller of Louisville, and Judge Hogan of St. Louis. We feel that the joint meetings have been of much greater benefit to us than the former plan followed.

"There are in Taylor County now nine regular doctors, a loss of one by the death of Dr. O. M. Kelsay, who passed away July 17. There are also one osteopath and eye specialist, one chiropractor, and two colored doctors."

SECRETARY McCORMACK: I move we adjourn until seven o'clock tomorrow evening.

The meeting adjourned at nine o'clock.

HOUSE OF DELEGATES

FOURTH SESSION, THURSDAY MORNING,
OCTOBER 6.

The meeting convened at eight o'clock, President Estill presiding.

Roll call.

PRESIDENT ESTILL: The roll call is the final report of the Committee on Credentials.

Next in order of business is the election of officers and nominations are made by counties.

J. A. ORR, Bourbon: Mr. Chairman, I desire to place in nomination for President of this Association a man who has served this Association long and well, a man who has given freely of his time and goodly counsel, a man who is eminently qualified to fulfill the duties of this office and upon whose shoulders the honor and dignity of this office would gracefully rest; a man who has been an outstanding leader in his profession as well as one of those staunch leaders who has worked unceasingly and untiringly to make this Association the splendid organization it is today; a man who is in every way worthy, and by honoring whom we would thus be honoring ourselves. I desire to place in nomination as President of this Association, Dr. John H. Blackburn, of Bowling Green. (Applause)

H. H. HUNT, Graves County: I want to place in nomination a very distinguished doctor, a doctor not only in name but in spirit, whose very soul, mind, body and heart have always been blended with the medical profession. He was raised a doctor of the old school. Like William McClure he was an honor to the profession.

He has been in the state medical society for thirty-five years. He helped organize the Southwestern Medical Association. He has been President and Secretary of that Association. He has been president and secretary of his county society. He has always helped organize. He has gone every time you called upon him. I understand he was about the first on here. I think he came Monday.

I want to put in nomination and cast the vote of Graves County for Dr. James T. Reddick, of Paducah, and I plead with you gentlemen, go thou and do likewise. (Applause)

H. G. REYNOLDS, Paducah: In seconding this nomination, there are a few things that I would like to say in regard to my personal contact with Dr. Reddick.

I have known him for twenty-one years and as Dr. Hunt said, Dr. Reddick is one of the few men that are left to us in the medical profession. He is a typical family doctor. He retained the love and affection of his patients. He has, by his efforts in organization, cemented the medical profession in the western part of the state in a way that today

they are absolutely united and harmonious in every respect.

Dr. Reddick has reached the time in life when an honor of this kind will mean to him the crowning of all his past efforts, and I think in selecting him for this office you have not taken from the honor of the gentleman who has just been nominated but will bestow it on a man who is eminently worthy; and for the younger man, his opportunity is still in reserve.

Therefore, I take pleasure in seconding the nomination of Dr. Reddick. (Applause)

O. W. BROWN, Foster: I wish to second the nomination of Dr. Blackburn of Bowling Green. If it is not out of order, I would like to say a word or two.

We all know Dr. Blackburn and have known him for many, many years. We know him to be the highest type of Kentuckian, or any other, doctor as far as that is concerned, it matters not where he comes from. We know him to be a perfect gentleman, possessed of all the essential qualifications necessary for any doctor to aspire to the high office that the Kentucky Medical Association has to confer upon any of our doctors.

I therefore heartily endorse and second the nomination of Dr. Blackburn of Bowling Green.

PRESIDENT ESTILL: I will ask the Secretary to go through the list if there are any other nominations.

SECRETARY McCORMACK: Boyle, Caldwell, Butler, Campbell-Kenton, Carlisle, Carroll, Christian, Clark, Crittenden, Cumberland, Daviess, Estill, Fayette, Fleming, Floyd, Franklin, Fulton, Garrard, Graves, Grayson, Hardin, Harlan, Harrison, Hart, Henderson, Henry, Hickman, Jackson, Jefferson.

FRANK T. FORT, Louisville: I would like to second the nomination of a man that really helped me in the embryonic stage in medicine. I had the pleasure of being associated with him for three years. He was almost like a father to me during that time although he was still a young man. In mind he is still a young man, and as far as his ability to do and to go, he is still a young man; but I feel at his time of life to crown, round out his life, as we would like to see it rounded out, and as he would like to see it rounded out, would be very fitting. I second the nomination of Dr. Reddick.

It is very hard for me to choose between the two men. I don't think there have ever been two men nominated who were better qualified to fill the position, but having known Dr. Reddick for thirty years and not finding him wanting in anything, I heartily endorse his nomination.

SECRETARY McCORMACK: Knott, Lawrence, Lewis, Lincoln, McCracken, McLean, Madison, Marior, Mason, Mercer, Metcalfe, Montgomery, Nelson, Owen, Owsley, Pendleton, Pike, Rowan, Russell, Scott, Shelby, Simpson, Taylor, Union, Warren-Edmonson, Washington, Wayne, Whitley.

PRESIDENT ESTILL: If there are no further nominations, I will ask Dr. Phil Blackerby and Dr. W. H. Smith to act as tellers.

The vote was taken.

PRESIDENT ESTILL: The result of the balloting showed a real horse race. Dr. Blackburn received twenty-three votes; Dr. Reddick twenty-two. Dr. Blackburn is elected.

I will ask our tellers, Dr. Blackerby and Dr. Smith, to escort Dr. Blackburn to the front.

PRESIDENT-ELECT BLACKBURN: Gentlemen of the House of Delegates: I can assure you that I appreciate this honor and it is doubly an honor to me when I feel that this was a real horse race and that I am able to defeat a man like Dr. Reddick, a man who I have known for years in the state medical, a man I have appreciated in his work and his worth.

To say to you gentlemen that a man doesn't appreciate this honor of being made President of the State Society, means that he isn't a doctor. There are some of us, probably, who would rather be president of a Rotary or Kiwanis Club, or deacon in a church, or president of an official board, or something of that sort, but to the real doctor there isn't any honor that comes to him above that that is given by his fellows in the practice of medicine. (Applause)

Gentlemen, from the bottom of my heart I appreciate this and I thank you. I shall depend upon the help of the profession of Kentucky to make the next year in the State Medical Society a real success.

I thank you. (Applause)

PRESIDENT ESTILL: I just want to say to Dr. Blackburn that if the officials and members of the State Society stand behind you as they have stood behind me, your task will be light. It certainly is a pleasure to work with them.

The next is the election of three Vice Presidents.

FRANK T. FORT, Louisville: I would like to put in nomination the name of Dr. P. F. Barbour, of Louisville, for First Vice President.

SECRETARY McCORMACK: I would like to nominate Dr. C. N. Kavanaugh, of Lexington as Vice President.

V. A. STILLE, Benton: I would like to nominate Dr. Barber, of Princeton.

SECRETARY McCORMACK: I move the

nominations be closed and the Secretary instructed to cast one ballot for the three Vice Presidents.

The motion was regularly seconded, put to a vote and carried.

PRESIDENT ESTILL: The Secretary will please do so.

The Secretary cast the ballot for the three nominees for Vice Presidents.

SECRETARY McCORMACK: We have to elect a delegate to the American Medical Association to succeed Dr. Davidson. The meeting will be in Minneapolis next year.

LOUIS FRANK, Louisville: I would like to nominate Dr. G. A. Hendon, of Louisville.

SECRETARY McCORMACK: I move the nominations be closed.

The motion was regularly seconded, put to a vote and carried.

PRESIDENT ESTILL: I would like to hear nominations for orator in surgery.

J. A. KIRK, Louisville: I would like to nominate Dr. B. F. Zimmerman, of Louisville.

H. E. PRATHER, Hickman: I second Dr. Zimmerman's nomination. He was my immediate commander during the war next to Dr. Abell.

C. H. JOHNSON, Paducah: I would like to nominate Dr. Rivers, of Paducah.

PRESIDENT ESTILL: Any other nominations?

J. A. KIRK, Louisville: I withdraw Dr. Zimmerman's name.

SECRETARY McCORMACK: I move that nominations be closed.

V. A. STILLEY: I would instruct the Secretary to cast one ballot.

PRESIDENT ESTILL: Dr. Rivers, of Paducah, has been elected orator in surgery next year.

J. A. ORR: I would like to place in nomination for orator in medicine the name of Dr. W. S. Wyatt, of Lexington.

W. B. McCLURE: I second that nomination.

PRESIDENT ESTILL: Are there any other nominations?

If there are no other nominations, may we have a motion that the Secretary cast one ballot.

The motion was regularly made, seconded, and carried.

The secretary cast the ballot.

SECRETARY McCORMACK: Dr. Blackburn being elevated to the Presidency makes a vacancy of Councilor of the third district.

PRESIDENT ESTILL: I would suggest that Dr. Blackburn nominate someone to succeed him.

PRESIDENT-ELECT BLACKBURN: I would like to place the name of Dr. C. C.

Howard, of Glasgow as Councilor for the third district.

H. E. PRATHER: I want to second his nomination as Dr. Howard was also in my unit. (Laughter)

PRESIDENT ESTILL: I want to say one thing, Dr. Prather is loyal to his superior officers, and I hope he gets to vote for Dr. Howard.

W. E. GARDNER: I move the nominations be closed.

SECRETARY McCORMACK: Dr. McChord's term as Councilor of the sixth district expires and I want to place Dr. McChord in nomination to succeed himself. He is the last of the Mohicans. He was one of the immortals elected the first time. Dr. McChord was elected when the reorganization took place and has been Councilor continuously since that time and has been chairman of the Council for about fifteen years, and I take great pleasure in moving that he be elected.

PRESIDENT ESTILL: I take it, unless there is some opposition, that Dr. McChord will certainly assume his duties again as Councilor.

SECRETARY McCORMACK: The Councilor for the tenth district whose term expires. Dr. Marks was elected for last year. I would like to place in nomination for that office, Dr. Charlie Vance of Lexington.

The motion was seconded.

PRESIDENT ESTILL: Any other nominations?

PRESIDENT-ELECT BLACKBURN: I move nominations be closed.

PRESIDENT ESTILL: Dr. Charles Vance is Councilor for the tenth district.

SECRETARY McCORMACK: The term of Dr. W. M. Martin, of the eleventh district expires and I would like to nominate Dr. Martin to succeed himself.

The motion was regularly seconded, put to a vote and carried.

PRESIDENT ESTILL: Place of meeting. We have an invitation to go to Richmond.

H. G. SANDLIN, Richmond: Mr. President, Fellow Members of the Kentucky State Medical Association: I am not only here as a delegate to this Association, but am here as an emissary of the County of Madison and the city of Richmond and her several organizations to invite the Kentucky Medical Association to Richmond next year.

Naturally you would want to know why we want the Association, whether or not we are able to care for the Association and that is your right and your due.

In the first place, I want to say that we live in the Blue Grass part of Kentucky on its eastern border in one of the most fertile and most

beautiful settlements in these United States. We have splendid roads, we have a hub of turn-pikes running into Richmond from every direction. You can go in and out of Richmond on every pike out of the city to every other county seat every hour on a bus line. Our roads are splendid in most directions.

We are twenty-six miles beyond the city of Lexington. We are on the border line of the great Cumberland mountain range. You can stand on the eastern section of our town and see the Cumberlands in all their majesty and beauty eighteen or twenty miles away.

We have in our town and in our county, I suppose, as many attractions as any other town in the state of its size.

Coming to the facility for taking care of this Association, I will say we are the seat of the Eastern Kentucky Normal school. We take care of 3000 students each year. Many of your sons and daughters come to our town for their education. We have a dormitory facility that is able to take care of as many people as will come to Richmond to the extent of 3000 or 4000. We have dining halls in the schools which are splendid. We can furnish you the necessary menu to sustain you as long as you stay in the town. We have all the necessary facilities to take care of the situation.

We would propose to have this Association the week preceeding the opening of the normal school in September. I don't know the exact date. We have from the president of the Eastern Kentucky Normal school a promise that the grounds and buildings and the new dormitories are at our disposal for this Association.

In the second place, we have a half dozen places to hold this Association. We have three or four new churches in Richmond on three different corners in the middle of town. Three of them are built with a view of taking care of large numbers of normal school students. We have in those churches assembly rooms where you can feed and care for the people and they are arranged with dining facilities to take care of as large a body of people as has been at this Association. We have the normal school and will have these dining halls.

We can feed you in our hotel. The hotel has agreed to take care of 100 additional. We have the church assembly rooms. We will have the dining halls and the rooms of the normal school. We will also have at that time a new high school completed with a splendid gymnasium and a splendid auditorium where we could meet if we wanted to. We could meet in the court house.

If there is any doubt of Richmond being able and capable and well qualified to take care of this Association, I hope you have be-

come disabused of that idea because we are able to take care of it and our people want it. One fellow said, "We want you to go down and have those people come up here. I want to take a look at them."

I am here for the purpose of extending to you, on behalf of Richmond, an invitation to hold your meeting there next year. Her different clubs met and passed resolutions endorsing this movement. They are back of the doctors, they want you and I extend to you a hearty invitation to come to Richmond next year. (Applause)

W. B. McCLURE: In Dr. Sandlin's splendid invitation, I am surprised that in speaking of the attractions he left out the most attractive thing we have there to the profession, and that is the location of the Trachoma Hospital. I am surprised he overlooked that, and to us that would be probably the greatest attraction we would find in Richmond.

H. G. SANDLIN: I want to say that it was an oversight. People are coming there from all over the country to look through this institution. It is a wonderful institution fostered by the Kentucky Medical Association and the splendid work of Dr. McCormack and the state health association presided over and controlled by Dr. Sory and Dr. Mossman, whom many of you know and whom we all have learned to love. That is really the biggest attraction for the State Medical Association.

SECRETARY McCORMACK: I would like to ask the sponsor of Richmond a question. Have any arrangements been made for playing the ancient and honorable game of golf?

H. G. SANDLIN: We have one of the best golf links in Kentucky.

W. B. McCLURE: I move we go.

PRESIDENT ESTILL: In support of Dr. Sandlin's message asking us to come to Richmond, he has already told us that Richmond is a small place, so I have a telegram from the five people of Richmond. (Laughter)

I have a telegram from William O'Neil, Mayor of Richmond, saying:

We wish to extend a most cordial invitation to your Association to hold your state meeting in this city in 1928.

The Rotary Club especially would like to see the Kentucky Medical Association meet in Richmond next year and sincerely trusts that our Association will accept and come to their city. The club will cooperate with us in every way while in session.

Greetings. Hope you are having a most successful meeting.

Southern Medical Association.
The Madison County Chamber of

Commerce cordially invites Kentucky Medical Association to hold 1928 convention in Richmond.

G. M. Brock, Secretary.

We cordially invite the Kentucky Medical Association to meet in Richmond next year and trust that your body will see fit to accept as you will find us ready to cooperate with you in every way while in our city.

Masonic Lodges of Madison County.

D. M. GRIFFITH, Owensboro: A great many years ago I had occasion to go to Richmond in which the spirit was an abundant as the feast of Bacchus, and Richmond to me is like the island of Thrace for the ancients. Once you are there you are never satisfied until you go again. Therefore, I want to second the nomination.

SECRETARY McCORMACK: I want to say that this meeting is now complete. I have waited will ill concealed patience until the liquid tones of the orator of Kentucky medicine shall have spoken in these brief words that he has said. He has revived in our memories his prowess and his power. Long life to him! I am for Richmond on account of that speech.

PRESIDENT ESTILL: Any other suggestions as to where we shall meet next year?

The motion was regularly seconded, was put to a vote and carried.

PRESIDENT ESTILL: As President of the Kentucky State Medical Society I feel that I am the protector of you gentlemen and I want to sound a note of warning to you.

I have a considerable amount of fear in going to Richmond because a few years ago my great, great, great, great grandfather went over there and had a little row with an Indian and killed him and he is buried in the Richmond cemetery. I want you to be careful when you go to Richmond, and look out for Indians.

We will now have the report of the Heart Committee of the Kentucky State Medical Association. I will ask the Secretary to read it.

SECRETARY McCORMACK: "During the past year the Heart Committee has made a study of various reports concerning the increasing death rate from heart disease in the United States. One of the most important of these reports is that written by J. S. Whitney, entitled 'Heart Disease Mortality Statistics', which was issued by the American Heart Association in May 1927. Study of this report shows that in the registration area in 1915 deaths from heart disease were 165.7 per one hundred thousand while in 1925 it was 185.5 per one hundred thousand population. With the exception of a slight increase in number of deaths from accidents and an 11

point increase in deaths from cancer, other important diseases have showed a definite decrease in the decade from 1915 to 1925.

"The most noteworthy decrease was, as you know, in tuberculosis the rate in 1915 being 146.3 as compared, in 1925, with 86.6 per one hundred thousand population. Heart disease causes 15 per cent of all deaths every year.

"Careful study of the statistics shows that the greatest increase in heart disease mortality is at the age of 65 and over. One thing that is encouraging in the statistics is that up to 15 years of age there has been a decrease in heart disease during the years 1915 to 1925. The decline probably is the result of present day pre-school and school examinations which have been carried out in the last ten years. From ages 15 to 24 there has been an increase in heart mortality reflecting perhaps that health instructions in these years have not been carried out as carefully as in the younger age groups. In the ages from 25 to 44 there has been a reduction of mortality of 9 per cent, while from 45 on there has been an increase, the greatest being at 65 and over where the increase amounts to 18 per cent.

"One interesting feature of the situation is the difference in death rate between rural and the city population. There seems to be a rise in heart mortality in the cities while a slight lowering is apparent in the rural population. The statistics cover a ten year period and this is too short a time to make definite deductions. It is important to bear in mind, however, that the city death rate is considerably higher than the rural and has remained so for a decade.

"With reference to sex the death rate is slightly lower in females under 5 but from the ages of 5 to 34 the death rate is definitely higher for females than for males. After 34 the male death rate is higher and continues so for the remainder of life.

"For Kentucky the death rate is somewhat lower than for the Northern States. Two reasons may account for this low death rate in Kentucky. One being that Kentucky's rural population is proportionally greater than in those states with many large cities and a large urban population. The other probably being the less rigorous climate for as a whole the Southern states show a lower mortality as compared with the Northern states, even taking into consideration Florida where the mortality is probably affected by health seekers among the white population.

"Undoubtedly the Southern states would show a still lower heart mortality were it not for the negro population. The death rate among negroes is from 1½ to slightly over 2 times that of the whites. Take for example, the death rate in 1923 in Kentucky and we

find that for negroes the rate was 249 per one hundred thousand population, while it was only 107 for the whites per one hundred thousand. For this year you will therefore see that the combined rate is 178 per one hundred thousand.

"Whitney concludes the report by saying: 'Probably the conclusion to be drawn from the perusal of all these charts and tables is that, while heart disease is on the increase and while it is the leading cause of death numerically, practically the whole increase in its mortality is at ages past 65. While there is no "desirable age at which to die" a death at the age of 70 is of less value economically than one at 30. So, even though the mortality is increasing, if the increase is confined to ages after 65, the mortality from heart disease is not a serious public health problem. On the other hand the morbidity, about which we know very little to date, is an enormous problem. Among the draftees in the recent war while two per cent were found to have tuberculosis, five per cent had cardiac disease, and only ten per cent of those with cardiac defects could be used at all in service and then only in a limited way. If we had similar figures for morbidity in the general population, the problem of the disability caused by heart disease would undoubtedly loom as one of the biggest problems with which health workers have to cope.

"We attended the meeting of the American Heart Association in Washington. There was a symposium on the problem of high blood-pressure, but nothing new was brought out.

"We have attended meetings of several county societies and spoken of the heart problems and heart disease in general. It is our hope that this work may be extended, by various members of the committee, during the coming year.

"Articles are being prepared concerning heart disease for publication in forthcoming numbers of the Kentucky Medical Journal. In addition the committee hopes that instructive articles may be inserted in the daily press emphasizing the prevalence of heart disease, the possibility of the prevention of certain forms and further calling attention to the necessity for periodic health examinations.

"Respectfully submitted,

Austin Bell, Hopkinsville,
J. W. Kincaid, Ashland,
Walter Byrne, Jr., Russellville,
John W. Scott, Lexington,
C. Z. Jackson, Arlington,
J. R. Morrison, Louisville,
W. L. Tyler, Owensboro,
C. Youtsey, Newport,
Silas Griffin, Henderson,

Ernest R. Goodloe, Paducah,
Emmet F. Horine, Louisville,
Chairman."

I move the adoption of the report.

The motion was regularly seconded, was put to a vote and carried.

PRESIDENT ESTILL: Dr. Prather, will you come up front and give your committee report?

H. E. PRATHER, Hickman: "Report of Committee on Medical Relief in Disaster.

"The House of Delegates of the American Medical Association at the Dallas session in 1926 approved the report submitted by a committee on Medical Relief in Disaster, which committee was composed of three distinguished ex-presidents of that great Association. This report is submitted to constituent state associations and component county societies in the hope that a plan will be adopted that will insure adequate and immediate medical relief in cases of disaster. The reason for this is the confusion that occurs immediately after any large disaster before the established state and national organizations which properly take charge of such situations arrive on the scene. The plan particularly has in mind disasters of such magnitude that they temporarily break down the ordinary machinery of the community for medical relief and call for the sudden mobilization of the medical profession of the community in order to cope with unexpected situations as was recently the case in the unprecedented Mississippi flood when 350,000 persons were rendered homeless and one million acres of crop land inundated.

"The purpose is to provide an organization that can immediately function in the case of disaster by reason of its having medical men designated in each county of the state whose duty it will be to organize and direct immediate medical relief in the interval before the arrival of the usual state and federal organizations including the Red Cross. After their arrival this organization is expected to put itself under their control.

"It is not its function to take charge of railroad disasters or of any other kind of industrial disasters where the corporation involved has its own medical organization.

"The great difficulty in these situations is that no one under present conditions feels that he can with propriety assume direction of disaster relief. It would seem, therefore, that the best plan would be for the House of Delegates of the Kentucky State Medical Association to designate the President of this association as the State Director of Medical Relief in Disaster and the State Health Officer by virtue of his office would be his first lieutenant with full power to direct all matters in which the health and sanitation of our great

Commonwealth are involved. In counties, the director of medical disaster relief should be the President of the County Medical Society, who, as evidenced by his position, has the confidence of the medical profession of his county and the county Health Officer would automatically become his first lieutenant and chief sanitary officer. Under this plan the president of the county medical society and the county health officer could not only with propriety assume direction of medical disaster relief by organizing an emergency hospital, if needed, and directing its medical personnel and by frequent conferences with each other and continuous cooperation should be able to minimize suffering and greatly prevent any communicable disease to the injured or to them who because of being the unfortunate victims of a disaster are forced to become the residents of a refugee camp.

"If this plan, which seems to us entirely practicable, is adopted by the House of Delegates of the Kentucky State Medical Association an immediate function would be to see to it that the presidents of the county medical societies, the county health officers, the profession and the public become acquainted with this plan of organization, and that in the event of disaster the president of the county medical society is to be looked to as the Director in charge of Medical Relief and the Health Officer, the Director of everything pertaining to the prevention of disease.

"The distinguished committee of the American Medical Association on Medical Relief in Disaster stated that this information should not only be given on the adoption of the plan, but should be repeated from time to time until the plan becomes a tradition and in disaster the profession and the public come naturally to expect the president of the county medical society to take immediate charge of all things pertaining to the injured and the County Health Officer to take charge of all things pertaining to sanitation and the public health, and to expect the medical profession to act under their direction as long as the immediate necessity exists.

"To this end information of this plan, if adopted, should be disseminated repeatedly by the Kentucky Medical Journal and by such other means as may be effective.

"Respectfully submitted,

R. M. Hathaway,

Luther Bach,

H. E. Prather, Chairman.

J. A. ORR, Paris: I move the adoption of the report.

The motion was regularly seconded, was put to a vote and carried.

PRESIDENT ESTILL: Report of the Committee on Periodic Health Examination.

A. M. LEIGH: "For the past two years the Kentucky State Medical Association has stressed the importance of the periodic health examination.

"In 1925 the subject of the President's annual address was 'The Periodical Examination of the Apparently Well.' At the Frankfort meeting, one of the most interesting and instructive sessions was devoted entirely to a demonstration of the proper method of making a health examination.

"Shortly after this meeting the State Board of Health presented each physician with the manual prepared by the American Medical Association. This is a very important document and will well repay the time and effort spent in mastering it.

"So far as the Committee has been able to ascertain there has been no concerted effort on the part of the local societies to bring this important phase of preventive medicine to the attention of the profession and the laity. This is to be regretted, for when one considers the enormous strides that have been made within the last generation along the lines of maternal and infant welfare and in the prevention of tuberculosis and other communicable diseases, it is evident that in the near future the same good can be accomplished for the latter decades of life that has already been attained for the earlier years.

"Seventy-five years ago about 6% of the deaths were due to chronic diseases, the remaining 94% being due chiefly to acute infections; now chronic diseases cause about one-half of the deaths.

"This is indeed a signal of danger to the man past middle life.

"In order to stimulate interest in this important phase of preventive medicine, the committee suggests the following plan:

"1. Each county society be urged to devote at least one meeting a year to a discussion of this subject with a demonstration of how to conduct such an examination and especially how to summarize the findings and to give advice to the health client in such a way that he will understand it and follow it.

"2. That physicians themselves and members of their families be asked to volunteer as subjects for periodic health examinations.

"3. That every physician be encouraged to educate his patients as to the value and need of the periodic health examination; this will make the periodic health examination the rule and not the exception.

"To physicians treating women and children the task is easy, as they already appreciate the immense value of prenatal care and infant welfare.

"4. That the existing health organizations and social service, especially those concerned

with tuberculosis, teach the value and need of the health examination.

"5. And last but not least, that the physician, the general practitioner, if you please, prepare himself for this important work.

"If such a plan should become universal it would be the best post-graduate course in physical diagnosis our profession could possibly take. This new viewpoint will elevate the practice of medicine to the position where it really belongs: it will make professional ideals compatible with professional welfare.

A. M. Leigh,
E. D. Turner,
J. D. Liles."

R. C. BURROW, Cunningham: I move the report be adopted.

The motion was regularly seconded, was put to a vote and carried.

PRESIDENT ESTILL: We will have the report of the Kentucky Crippled Children's Commission and Kentucky Society for Crippled Children.

W. BARNETT OWEN: "Kentucky Crippled Children Commission and Kentucky Society for Crippled Children.

"1. What are they?

"The Kentucky Crippled Children Commission is composed of five citizens, appointed by the governor, who serve without salary and who are responsible for the proper distribution and wise use of the funds appropriated by the state for the correction of crippled children. All details of the work is handled by a Director, Miss Marian Williamson, with an office in the State Board of Health Building, Louisville.

"The Kentucky Society for Crippled Children is an organization composed of Rotary, Kiwanis and other civic clubs, church societies, and any individuals interested in the welfare of crippled children.

"II. What was their origin?

"The Commission was created by the General Assembly of 1924 with the passage of a bill appropriating \$20,000 for the correction of crippled children during the biennial period of 1924-26. In 1926 an increased appropriation of \$100,000 per annum was granted for the biennial period ending June 30, 1928.

"The Society was formed in 1923 by the Rotary Clubs of the State as a branch of the International Society for Crippled Children, formed in 1919 at Toledo, Ohio.

"III. What are their functions?

"The purpose of the Commission is to provide free examination, diagnosis, hospital care, and every possible physical improvement for crippled children throughout the State.

"The purpose of the Society is to promote the movement for correction of crippled chil-

dren by enlisting the support of the united citizenship of Kentucky, and by obtaining legislative appropriations for this purpose; to supplement the funds of the Commission when necessary; and to devise the best methods for solving the educational, economic and social problems of the crippled child.

"IV. How are they maintained?

"The Commission is maintained by biennial appropriation of the State Legislature.

"The Society is maintained by funds raised through the payment of annual dues, a minimum of \$2.00 per member. A membership campaign is conducted in October of each year. Donations of any kind are welcomed by the Society.

"V. How are they governed?

"The affairs of the Commission are handled by the State appointed members, who hold monthly Board meetings.

"The Society is governed by a Board of Directors elected at an annual meeting of the entire membership. The Board meets upon call of the President. The Society maintains a joint office with the Kentucky Crippled Children Commission.

THE WORKING PROCEDURE OF THE TWO ORGANIZATIONS.

"How is the work conducted?

"Every spring and autumn, free diagnostic clinics, conducted by the Commission and sponsored by local clubs and committees, are held in various sections of the State. Examinations are made by trained orthopedic surgeons, and children whose condition can be helped are committed to the hospital for operation by these surgeons or for corrective treatment. These surgeons donate their time and skill to indigent children.

In what locality are children treated?

"The present hospital units are in Louisville, Lexington and Ashland.

What provision is made for education of children?

"School teachers are provided by the Louisville Board of Education in three Louisville hospitals. Effort is being made to obtain the same advantages in the Lexington and Ashland hospitals. The Junior League maintains an occupational therapy department in one of the Louisville Hospitals. Scholarships to Berea College have been furnished by civic clubs and interested individuals to several children who have shown unusual ambition and intelligence. As many boys and girls as possible are assisted to become self-supporting.

What care do children receive after period of hospital treatment is ended?

"Graduate nurses employed by the Commission as field workers pay home visits to each patient discharged from the hospital, to

see that the child is wearing corrective equipment furnished him, and to secure the cooperation of the parents in continuing proper home care for the child in order that the greatest benefit may be derived from the hospital treatment.

What has been accomplished by the Kentucky Crippled Children Commission and Kentucky Society for Crippled Children?

"In three years time since the beginning of the work in September, 1924, nearly 1,000 crippled children have had their deformities corrected and have returned to their homes. Children have been corrected from every county in Kentucky. There are now several thousand more children awaiting their turn for hospital and surgical care.

"1. What has been done for the crippled child?

"From one hundred and twenty-five (125) to one hundred and fifty (150) cases continuously have been under treatment in the hospitals. Twenty-five diagnostic clinics have been conducted.

"2. What is being done?

"An attempt is being made to locate all crippled children in the state through surveys sponsored by luncheon clubs, local doctors and health authorities and school teachers. Examination of crippled children is made through the medium of diagnostic clinics conducted in different sections of the state. Hospital treatment is given any indigent crippled child whose case can be helped, and whose parents willingly entrust the child to the care of the Commission. Educational facilities are provided in three Louisville hospitals, occupational therapy is provided in two hospitals. All cases dismissed from the hospital are visited in their homes by trained public health nurses.

"3. What can be done?

"Depends upon the amount of money appropriated by the State legislature and the cooperation and interest of the citizens of the State. With an increased appropriation a larger number of children can be treated and additional advantages provided.

"Kentucky Crippled Children Com.
W. Barnett Owen, Chairman,
Chas. C. Garr,
Jno. D. Trawick."

J. H. BLACKBURN: I move the adoption of the report.

The motion was regularly seconded, was put to a vote and carried.

PRESIDENT ESTILL: The appointment of permanent committees will be mailed out from the Secretary's office.

FRANK T. FORT, Louisville: It has been brought to my attention that it might be advisable for the President to appoint a commit-

tee to appear before the graduating class at the University of Louisville, as the greater percentage of them practice in Kentucky, and make rather a pre-Kentucky State Society talk to them; tell them of the advantages of belonging or joining the county and state societies as soon as they get out.

I know when I graduated, the doctors back there were dumber on certain lines than we are at the present time. I think most of our boys graduating now are very precocious, but I think a talk to the graduating class along that line might be of advantage. Some older man or some man who has gone through that trend can tell them something about the pitfalls and something of the advantages, something of the disadvantages, something about the isms and chisms and practices that are performed; and we could get together in some way and have a little banquet and start them on the right foot.

PRESIDENT ESTILL: I think that is an excellent suggestion.

L. H. SOUTH: I second the motion.

The motion was put to a vote and carried.

PRESIDENT ESTILL: I think that is a very important thing. I will name on that committee, Dr. Fort, Dr. South and Dr. George A. Hendon.

I know what this will mean. I remember my own experience, being handed my diploma from the medical school and then I wondered, what next. I am sure a thing of this kind will mean a great deal to the graduating class, and it will mean a lot to us to show them the thing to do is to join a medical society and do their part when they get out.

PRESIDENT ESTILL: Report of the Committee on Public Policy.

LOUIS FRANK: The only question that the Committee deemed of sufficient importance to bring before the body this morning is the communication from the executive secretary of the bureau of legal medicine and legislation of the American Medical Association, and I think it can best be done by reading the letter which I have in my hand.

"Dr. Louis Frank, Chairman
Committee on Public Policy,
Kentucky State Medical Association,
Louisville, Kentucky.

"Dear Doctor Frank:

"Doctor A. T. McCormack, Secretary, Kentucky State Medical Association, has just called my attention to the meeting of the Association to be held on October 3-6 and has suggested that I write to you any suggestions that I have to offer that seem to be within the purview of your committee. Only one occurs to me at the present moment, and that is the suggestion that the Kentucky State Medical Association endorse the prin-

ciples of a bill that I expect to be introduced in the coming Congress, to regulate the promulgation of regulations under the National Prohibition Act and the Harrison Narcotic Act, and under any other act or acts now in force or hereafter enacted for the regulation of traffic in liquor and in narcotics.

"The proposed bill is not designed to curtail in any way the right of federal officers to make regulations. Its purpose is merely to define the procedure leading up to the promulgation of such regulations and to their promulgation and the recording of them in an accessible place. A preliminary draft of the proposed legislation is enclosed.

"As matters now stand, the Commissioner of Prohibition and the Secretary of the Treasury can lawfully promulgate at any moment any regulation necessary to carry into effect the acts named above. They are the sole judges in the first instance of the necessity for any such regulation and of the form it shall take. Of course, the necessity for any such regulation may be finally determined by the courts, but this is a determination that comes long after the promulgation of the regulation and is an expensive and sometimes an embarrassing procedure. While during very recent months, it has been customary for the Commissioner of Prohibition to confer with the medical profession and with others in order to determine the need for and form of regulations, this has not always been done. The proposed bill will require an official notice to be given of intent to promulgate any regulation or regulations, with an opportunity to all interested parties to be heard or to file briefs.

"The Commissioner of Prohibition and the Secretary of the Treasury can now promulgate a regulation to take effect instantly. It need not be published anywhere. It becomes a law before the ink is dried on the signature of the Secretary of the Treasury. The proposed legislation will require that a reasonable time elapse between the promulgation of a regulation and the time it takes effect and that the regulation be officially published in some stated place.

"It is sometimes exceedingly difficult to ascertain exactly what regulations are in force governing the matters referred to above, namely, traffic in narcotic drugs and traffic in liquors. The proposed legislation requires that all regulations be promulgated in a stated place and that they be collected annually and officially published.

"All of these requirements seem to me to be reasonable, and I have assurance of a very considerable support for the proposed measure. I hope that the Kentucky State Medical Association will join in supporting it.

"In as much as Doctor McCormack suggested that I communicate with Doctor V. A. Stilley, Chairman of your Committee on Legislation and Public Instruction, concerning matters of legislative import, I am sending him a copy of this letter.

"Yours truly,

Wm. C. Woodward,
Executive Secretary, Bureau
of Legal Medicine and Legis-
lation."

I think this body, or maybe the President should name a committee to cooperate with these people in this bill being put through.

J. A. ORR: We will probably consider this matter, but shall we endorse it until we know its contents? We haven't seen a draft of the bill. Shall we go ahead and endorse something blindly without knowing what it contains?

PRESIDENT ESTILL: I think Dr. Frank's suggestion will take care of that, to refer it to a committee who will have power to act.

SECRETARY McCORMACK: I move we endorse the proposed legislation on principle and the Committee on Public Policy be empowered to act when finally drawn.

The motion was put to a vote and carried.

PRESIDENT ESTILL: Report of Committee on Public Health in Education.

W. E. GARY: "If it were possible for every county to have a whole time health officer, medical inspector of schools, and public health nurses this committee would have no report to make or work to do. Such service, the inestimable value of which is known to all of us, can be had by only fifty per cent of the school children of our state.

"Since an effort is to be made this fall to put on a campaign to stir up interest in general educational matters in order to try to improve conditions by acts of Legislature this next session, it was deemed advisable for this committee to confine its recommendations to only elemental problems.

"To give you some idea of the enormity of this problem we call your attention to the report of the findings of Rotary Clubs and other civic organizations in their inspections of the rural schools made last year.

"Briefly this report shows less than twenty per cent of the children are vaccinated against smallpox and a still smaller per cent are inoculated against typhoid or other diseases.

"The sanitary surroundings are not satisfactory, there being practically none or only a few sanitary toilets to each county, the water supply in many cases is questionable as to its purity and in some cases entirely absent, very few school buildings are properly

heated or ventilated and in nearly all the lighting effect could be improved.

"The necessity for desks of proper size so that the children can maintain the correct posture receives very little attention.

"To be able to point out a remedy for these conditions it is necessary to consider the causes.

"These conditions do not exist to such an extent in our larger towns and cities because the law allows them to fix their school taxes higher if they so desire and they have more money than the rural schools.

"The tax limit for cities and towns is one dollar per hundred while county schools are restricted to fifty cents. Is it right that our county children should thus be so handicapped by law in matters both of education and health?

"In some counties an effort has been made to overcome this by consolidating the schools with the results that while we have some better schools the necessary cost of free transportation has been all out of reason and at the expense of the less fortunate schools. In places where transportation is not furnished the schools are too far away so that today there are more children not attending school than was true even when we attended the graded schools.

"Another cause in counties where there is only a part time health officer and no medical inspection of school children the laws are not enforced because the salary is insufficient to cause him to do so and the school authorities are not required to enforce them so they satisfy themselves by simply passing the buck and doing nothing.

"What is the use of the medical profession of today trying to educate our patients in private practice in matters of personal hygiene and health when our precocious youngsters are taught daily by example to come in contact with other children having acute and chronic diseases without taking proper precautions for preventions and protection against them, to use toilets where all rules of sanitation are broken and in many cases where modesty of person is violated, to use impure water and the common drinking cup, to be forced to spend a good deal of their day in a poorly lighted, improperly heated and ventilated buildings, to sit in desks too large or too small for their bodies.

"Realizing that it is the duty of the medical profession to call attention to these matters the committee presents the following recommendations:

"1st. That the Kentucky State Medical Association goes on record as condemning the existing conditions in no uncertain terms.

"2nd. That we recommend to the Educa-

tional Committee that they pay especial attention to health conditions in their program of arousing the people to improvements needed in the educational laws.

"3rd. That we aid and promote wherever possible the establishment of medical inspection of schools.

"4th. That we use our efforts to have enacted laws giving us sufficient funds to give our rural children the same advantages enjoyed by those in cities especially in counties when they so desire as expressed by a vote of the people.

"5th. That some special provision be made compelling school authorities to enforce health regulations, especially in the majority of our counties having no whole time health officer.

"6th. That the President appoint a committee or instruct some existing committee to see that these recommendations are carried out and to assist the Educational Program Committee in doing so.

"Respectfully submitted,

Horace Luten,

W. E. Gary,

Committee."

SECRETARY McCORMACK: I move the adoption of this very important report and that the committee of the House be made a permanent committee to carry out the campaign necessary to make it effective.

The motion was regularly seconded, was put to a vote and carried.

SECRETARY McCORMACK: I would like to move you sir, that the gratitude of this Association be expressed to the Daviess County Medical Society and particularly and especially to Dr. R. E. Griffin, the Chairman of the Committee on Arrangements, and to Mrs. Griffin whose indefatigable zeal and generous cordiality have made all of us feel so welcome in Owensboro.

In addition, our thanks be extended to the pastor and board of stewards of this church for their hospitality in entertaining us, and to the civic clubs and people of Owensboro and to the newspapers of Owensboro, the Messenger and Inquirer, for their splendid reports of our meeting.

I will also include gratitude to the hotels and to the private houses that have been so kindly opened to us.

And to the management of the Country Club and to Dr. Rash as chairman of the Golf Tournament Committee.

PRESIDENT ESTILL: I suggest that instead of voting on this in the usual manner we express our appreciation by a rising vote.

The motion was carried.

SECRETARY McCORMACK: While we are arising, I would like to move you also that we express our affection and confidence

and gratitude to our distinguished President, not only for the splendid and orderly procedure which he has enforced, but for his suavity and versatility in the conduct of his office, and especially for his wise selection of Dr. J. W. Scott as the controlling member of the Program Committee, for I believe we have had the most scientific and instructive post-graduate course in our program that we have ever had in the society.

H. E. PRATHER: I would like to have you include in there, our Secretary of the State Medical Association.

PRESIDENT ESTILL: All of us know that the only officer, or person, connected with the State Medical Society that is not purely nominal, is our Secretary.

Before we adjourn, I would be very happy if someone would make a motion that we ask the Secretary to write a note to Dr. Scott expressing our appreciation of this beautiful program that he has compiled for us.

LOUIS FRANK: I so move.

The motion was regularly seconded, was put to a vote and carried.

D. M. GRIFFITH: We have elected an orator in surgery and an orator in medicine, and we have heard two splendid deliveries of both of those offices at this meeting. But we bring them right at the noon hour, twelve o'clock, when everyone wants to get away. They have spent months and months, and I want to move to amend the by-laws that we

meet and designate that as a special hour at eleven-thirty instead of twelve. It isn't fair to the essayist to put it at twelve o'clock when the people want to get away.

LOUIS FRANK: Make it an evening address after the public address.

PRESIDENT ESTILL: The motion has been made that we have the two orations one evening during the meeting, instead of having them at twelve o'clock, the evening of the popular address.

I believe three together would be too much. We could have the two orations on Tuesday evening and the public address on Wednesday.

J. A. ORR: Speaking for that motion, as a rule the public address is never over an hour, rarely ever that much. This policy of having three in the Southern Associations obtains and is usually not too long.

LOUIS FRANK: Let the Program Committee work it out.

SECRETARY McCORMACK: I think it would be very well, indeed, Mr. Chairman, to have the address in surgery appear with the section in surgery, then have the address in medicine appear on the evening with the general address.

The motion was regularly seconded, was put to a vote and carried.

The following accounts were approved by the Council and upon motion, were ordered paid:

October 6—Voucher Check No. 15	\$ 25.00
W. H. EDWARDS, Owensboro.	
To services as porter and night watchman, Settle Memorial Church.	
Approved by Council and Ordered Paid by House of Delegates.	
October 6—Voucher Check No. 16	\$ 100.00
W. D. CHAMBERS Treas., Settle Memorial Church, Owensboro.	
To use of Church for State Meeting.	
Approved by Council and Ordered Paid by House of Delegates.	
October 10—Voucher Check No. 17	\$ 50.00
CLARENCE NEIGHBORS, P. M., Bowling Green.	
To postage on Journals.	
Approved by Council and Ordered Paid by House of Delegates.	
October 10—Voucher Check No. 18	\$ 532.45
TIMES-JOURNAL PUBLISHING CO., Bowling Green.	
To 2250 96-P. July Issue	\$516.95
To 40 Changes	8.00
To Envelopes	15.00
To Printing Envelopes	2.30
To Stamps	.20
	\$542.45
Less by 40 Errors	10.00
Approved by Council and Ordered Paid by House of Delegates.	
October 10—Voucher Check No. 19	\$ 768.97
TIMES-JOURNAL PUBLISHING CO., Bowling Green.	
To 2750 120-P. Sept. Annual No.	\$674.00
To 40 Changes	8.00
To Envelopes	15.00
To Printing Envelopes	2.30
To Setting 90668 Ems to 6 pt.	90.67
	\$789.97
Less by 84 Errors	21.00
Approved by Council and Ordered Paid by House of Delegates.	
October 31—Voucher Check No. 20	\$ 231.65
DR. A. T. McCORMACK, Secretary, Louisville.	
To October Salary	\$150.00
To Sundry Expense at Owensboro Meeting	81.65
Approved by Council and Ordered Paid by House of Delegates.	

October 31—	Voucher Check No. 21	\$	131.00
	DR. L. H. SOUTH, Business Manager, Louisville.		
	To October Salary	\$100.00	
	To Ex. to Owensboro Meeting, R. R. Fare, Hotel and Bus	31.00	
	Approved by Council and Ordered Paid by House of Delegates.		
October 31—	Voucher Check No. 22	\$	75.00
	ELVA V. GRANT, Bookkeeper, Louisville.		
	To October Salary		
	Approved by Council and Ordered Paid by House of Delegates.		
October 31—	Voucher Check No. 23	\$	48.35
	MAYME SULLIVAN, Louisville.		
	To Honorarium	\$ 25.00	
	To Expense at Owensboro Meeting	23.35	
	Approved by Council and Ordered Paid by House of Delegates.		
October 31—	Voucher Check No. 24	\$	27.30
	GUNHILD WENNERGREN, Louisville.		
	To Honorarium	\$ 25.00	
	To Expense at Owensboro Meeting	2.30	
	Approved by Council and Ordered Paid by House of Delegates.		
October 31—	Voucher Check No. 25	\$	32.50
	DR. W. B. McCLURE, Treasurer, Lexington.		
	To Expense to Owensboro Meeting.		
	Approved by Council and Ordered Paid by House of Delegates.		
October 31—	Voucher Check No. 26	\$	34.55
	DR. J. H. BLACKBURN, Councilor, Bowling Green.		
	To Expense as Councilor 3rd District.		
	Approved by Council and Ordered Paid by House of Delegates.		
October 31—	Voucher Check No. 27	\$	6.20
	STEPHEN P. COMBS, Clerk, Letcher County Court, Whitesburg.		
	To Court Costs in case: Dr. W. Edgar Fallis vs. J. H. Collier.		
	Approved by Council and Ordered Paid by House of Delegates.		
October 31—	Voucher Check No. 28	\$	152.47
	S. W. BASSETT CO., Providence, R. I.		
	To 300 Bangles—"Louisville 1927"	\$ 78.00	
	To 200 Buttons—"Kentucky State Medical Ass'n."	74.00	
		\$152.00	
	Insurance .....	.47	
	Approved by Council and Ordered Paid by House of Delegates.		
October 31—	Voucher Check No. 29	\$	77.89
	ELIZABETH McCORMICK MEMORIAL FUND, Chicago.		
	To Expense of Dr. Hedger to Owensboro Meeting.		
	Approved by Council and Ordered Paid by House of Delegates.		
October 31—	Voucher Check No. 30	\$	5.13
	MEFFERT EQUIPMENT CO., Louisville.		
	To 1000 White Cards, 4x6	\$2.43	
	To 1000 Flat Drinking Cups	2.70	
	Approved by Council and Ordered Paid by House of Delegates.		
October 31—	Voucher Check No. 31	\$	153.16
	HOTEL OWENSBORO, Owensboro.		
	To Hotel Expense, Dr. A. T. McCormack	\$ 94.16	
	To Hotel Expense, Dr. Estill	17.50	
	To Hotel Expense, Miss Sullivan	15.80	
	To Hotel Expense, Miss Wennergren	25.70	
		\$153.16	
	Approved by Council and Ordered Paid by House of Delegates.		
October 31—	Voucher Check No. 32	\$	97.71
	C. T. DEARING PRINTING CO., Louisville.		
	To 750—77th Annual Meeting Programs.		
	Approved by Council and Ordered Paid by House of Delegates.		
October 31—	Voucher Check No. 33	\$	1.10
	ALEX J. SCHULTZ, Louisville.		
	To 1 Picture Frame.		
	Approved by Council and Ordered Paid by House of Delegates.		
October 31—	Voucher Check No. 34	\$	266.88
	LUDLOW PETTY, P. M., Louisville.		
	To 8000 No. 5 Envelopes @ \$21.92	\$175.36	
	To 4000 No. 8 Envelopes @ \$22.88	91.52	
	Approved by Council and Ordered Paid by House of Delegates.		
October 31—	Voucher Check No. 35	\$	2.50
	KENTUCKY ACADEMY OF SCIENCE, Lexington.		
	To 1 Year's Dues.		
	Approved by Council and Ordered Paid by House of Delegates.		
October 31—	Voucher Check No. 36	\$	12.33
	BUSH-KREBS CO., Louisville.		
	To 4 cuts.		
	Approved by Council and Ordered Paid by House of Delegates.		
October 31—	Voucher Check No. 37	\$	15.80
	OTHO HASKINS, Louisville.		
	To Expenses to Owensboro		
	To Room and Board	\$10.00	
	To Transportation	5.00	
	Approved by Council and Ordered Paid by House of Delegates.		
October 31—	Voucher Check No. 38	\$	561.70
	TIMES-JOURNAL PUBLISHING CO., Bowling Green.		
	To 2250—100 P. October Journal	\$536.40	
	To 40 Changes	8.00	
	To Envelopes & Printing	17.30	
		\$561.70	
	Approved by Council and Ordered Paid by House of Delegates.		

October 31—	Voucher Check No. 39	.....	\$	35.00
	WOMAN'S AUXILIARY, Kentucky State Medical Ass'n., Louisville.			
	To December Advertisements collected.			
	Approved by Council and Ordered Paid by House of Delegates.			
October 31—	Voucher Check No. 40	.....	\$	10.00
	DR. D. M. GRIFFITH, Owensboro.			
	To Expense at Owensboro Meeting.			
	Approved by Council and Ordered Paid by House of Delegates.			
October 31—	Voucher Check No. 41	.....	\$	5.67
	BURNAM & GREENLEAF, Richmond.			
	To Expense, Telephone & Telegraph Calls.			
	Approved by Council and Ordered Paid by House of Delegates.			
October 31—	Voucher Check No. 42	.....	\$	27.50
	WESTERFIELD-BONTE CO., Louisville.			
	To 25 copies of Brief—Elizabeth S. Irvine Estate.			
	Approved by Council and Ordered Paid by House of Delegates.			

The meeting sine die adjourned at nine-thirty o'clock.

A. T. McCORMACK, Secretary.

ORIGINAL ARTICLES

PUBLIC HEALTH IN KENTUCKY.*

By DANIEL HEALEY, M.D., C.M., University of Kentucky.

Fifty-four years ago the American Public Health Association held its first annual meeting in Cincinnati and it is interesting that the adjacent state of Kentucky, with a medical history of which she is justly proud, but slowly realized the importance of the new spirit which, breathing upon medicine, called forth its latent powers as a social agency.

From early colonial days until recent years the health of our citizens had been exclusively in the hands of private physicians who derived their incomes from the treatment of disease, and who were consulted only when sickness had occurred. With the steady growth in population and industrial development, resulting in congested and insanitary areas with increase of disease, it was recognized that a large percentage of the sick in many communities was not reached by the private physician. It was natural that the inability of the private physician to cope with community disease should be but slowly recognized in Kentucky where increase in population and congestion in restricted areas had been relatively slow, and where many physicians were men of marked ability, commanding the confidence of the entire communities.

In 1878, during the epidemic of yellow fever, the State Board of Health was created primarily to protect the citizens of the Commonwealth against yellow fever, cholera and smallpox. Two years later the General Assembly fully authorized the State Board of Health to do all things then considered necessary for the protection of the public health, and the following General Assembly authorized the Board to examine into nuisances, sources of filth, and causes of sickness and to abate the same. It is interesting to note that the Federal Government did not create a national board of health until 1879.

Forty years ago public health officials thought their entire duty was to prevent the spread of yellow fever, cholera, smallpox and similar epidemic diseases, but as their experiences in the field of public health multiplied they learned that, in this country, many more persons died each year from tuberculosis, typhoid fever, diphtheria and other everyday diseases than the total number dying from all the so-called plagues, and they realized that their most important duty was to study intensively the occurrence of these diseases and, if possible, discover methods of prevention. The first step in such an undertaking is the gathering of reliable vital statistics and this the State Board of Health began through the voluntary co-operation of the physicians of the state, continuing its development during a period of twenty years and finally, by meeting the standards set by the Federal Government, placed Kentucky within the "registration area" in 1911.

For forty years the State Board of Health spread throughout the state the doctrine of improved public health and sanitation. Other agencies, notably the county and municipal boards of health, the Kentucky Tuberculosis Association, and the State Federation of Women's Clubs had been active in stimulating interest in public health. The physical deficiencies of our young men revealed by the war draft crystallized public opinion and the General Assembly in 1920 amended the laws dealing with the State Board of Health, granting the board "general supervision of the health of the citizens of this state."

The State Board of Health was reorganized, an administrative and general department was established as well as bureaus dealing with the following subjects: Bacteriology; vital statistics; sanitary engineering; public health education; food, drugs and hotels; tuberculosis; county health work; public health nurses; trachoma; venereal diseases; medical practice act; and child hygiene. The State Board of Health secured the co-operation of all agencies interested in the public health of the state; the annual in-

*Read before the Fayette County Medical Society.

come of the Board has grown from the \$1,200 appropriated in 1878 to \$206,909.52 in 1925-26, derived as follows:

TABLE I.

State appropriations	\$138,798.84
Federal appropriations	26,298.64
Department income	39,602.96
City contributions	577.67
Donations from private sources....	1,637.41
Total	\$206,909.52

The per capita cost of the Board's activities has been less than that of any state in the union doing effective work. (2)

Acute infectious diseases constitute one of the most important of the public health problems, and it will be of interest to consider the status of such diseases in Kentucky. In 1880 the Federal Government established a "registration area" within which it can be determined that the registration of deaths is 90 per cent of those which actually occur. Kentucky was placed within this area in 1911. Table 2, compiled from the mortality statistics of 1911 and 1923 shows the death rate per 100,000 in the more important acute infectious diseases in Kentucky as a whole, in the urban population, in the rural population, and also for the "registration area" as a whole:

One of the most interesting features of Table 2 is the entire absence of yellow fever and cholera from the "registration area," and the almost complete absence of smallpox from the same area during both years. It is also of interest to note that the urban communities of Kentucky have fair control of infectious diseases with the exception of tuberculosis, pneumonia, and whooping

cough. On the other hand, the rural communities of Kentucky are behind the average for the "registration area." Forty odd years ago state boards of health were created to combat yellow fever, cholera and smallpox, and Table 2 clearly demonstrates that, after forty years, victory over these diseases has been won. It is not unreasonable to suppose that the efforts made during the next forty years will produce similar results, and that a table compiled from the morality statistics of 1967 will show an absence, or mere trace, of infectious diseases.

With an estimated total of 19,000 acute cases, tuberculosis is the most widely spread infectious disease in Kentucky. Somewhat more than 10 per cent of the population of Kentucky is colored and if the death rate from tuberculosis be adjusted according to color, Kentucky has the highest death rate from tuberculosis for each race, namely, white 121.6, colored 292.7 per 100,000 population. During the period 1911-1923 the death rate from all forms of tuberculosis declined 40 per cent in Kentucky, while during the same period, the death rate from similar cases declined 42 per cent in the "registration area." This gradual improvement is largely the result of educational methods followed by the State Board of Health, the Kentucky Tuberculosis Association, and the National Tuberculosis Association. The state has provided a sanitarium which, however, accommodates only 65 patients who are required to pay \$15 per week. There are five "district sanatoria" which together accommodate 395 patients who pay according to their ability, and one private sanatorium accommodating 90 patients. The last General Assembly pro-

TABLE II.

	Registration Area		Kentucky					
			State		Urban		Rural	
	1911	1923	1911	1923	1911	1923	1911	1923
Tuberculosis in all forms	158.9	93.6	231.1	139.0	187.7	138.2	245.2	134.7
Pneumonia in all forms	133.6	109.0	99.6	105.0	96.3	132.4	100.3	87.6
Infantile diarrhea	77.2	32.4	50.2	41.5	33.4	8.2	55.4	11.8
Diphtheria	18.6	12.1	24.9	14.0	8.6	6.2	29.6	16.4
Purperal, all causes (1)	15.7	6.7	17.7	6.0	10.4	1.6	19.9	1.1
Whooping cough	11.0	9.7	19.1	16.8	4.8	22.2	23.1	15.9
Typhoid and paratyphoid	20.8	6.8	46.6	19.6	24.8	9.4	53.2	22.5
Scarlet fever	8.6	3.5	3.7	2.1	3.2	2.6	3.2	2.0
Measles	9.8	10.8	19.8	16.9	17.4	9.0	20.0	19.5
Malaria	2.8	2.8	10.3	2.2	6.8	1.6	10.8	2.3
Smallpox	0.2	0.1	0.1	(2)	0	0	0.2	(2)

(1) Per 1,00 live births.
(2) Less than 0.1.

vided 50 cents per day for indigent patients in the district sanatoria and further provided 10 per cent of the amount expended on new buildings, or for repairs and upkeep of the present buildings in district sanatoria, no sanatorium, however, to receive more than \$25,000 in any one year. It is an interesting fact that in Kentucky "with an expenditure of less than one per cent of the amount spent in many other states" (2) the decrease in the death rate from tuberculosis almost equalled the decrease throughout the "registration area" during the same period.

Diarrhea and enteritis (under 2 years of age), typhoid and paratyphoid fevers, considered as public health problems, form the next important group of diseases. The death rate from diarrhea throughout the "registration area" declined 58 per cent during the period 1911-1923, while in Kentucky the death rate from diarrhea, during the same period, declined only 17.4 per cent. The death rate from typhoid fever throughout the "registration area" declined 67.3 per cent while in Kentucky the death rate from typhoid fever declined 58 per cent. These diseases are **mainly water borne** and their control is the work of the sanitary engineer. During 1925 sanitary inspections were made of 120 water supplies. Eleven of these water supplies were inspected three times, and twenty-nine were inspected twice. It is estimated that there are 200 water supplies throughout the state, thus 40 per cent of the water supplies were not inspected. As the personnel of the Bureau of Sanitary Engineering in 1925 consisted of a sanitary engineer and a stenographer with a total expense of about \$5,000.00, it is readily understood why Kentucky, with one exception, has the highest death rate from typhoid and paratyphoid fevers, and dysentery, within the "registration area."

The Bureau of Vital Statistics received during 1925, 95,311 certificates divided as follows: Deaths 28,448, a rate of 11.4 per thousand population. Births, 64,828, a decrease of 1095 over the year 1925, and a rate of 26.2 per thousand. The corresponding rates for the U. S. registration area for 1923 were deaths 12.3, births 22.4, per thousand population.

During the past sixty years trachoma has been **prevalent in the mountain counties of Kentucky**. This disease, which attacks the eyes, is highly contagious, beginning as an acute condition in young children and if untreated, continuing throughout life, frequently ending in total blindness. It is the

most important of the chronic inflammations of the eye, spreading from person to person, usually by means of towels infected by the eye secretions. At the onset of the disease and during acute relapses, the eyelids are swollen, the conjunctiva much injected, and there is a moderate amount of secretion. Later the conjunctiva is much thickened and studded with minute granulations, the so-called trachoma bodies, which are small grayish, translucent nodules resembling grains of boiled sago. In long standing cases atrophy of the conjunctiva with scar formation occurs, often causing the eyelids to curve inward so that the lashes rub against the conjunctiva, while the scars interfere with the movements of the eyeball. Eleven years ago the U. S. Public Health Service established a trachoma hospital at Hindman, Kentucky, selecting this location because Knott County showed the largest number of cases. Later on two more hospitals were established, one at Pikeville and the other at Jackson, the total accommodation of the three hospitals being 58 beds. In 1920 the General Assembly appropriated \$15,700 for the purpose of combating this disease. The statistics of the bureau of trachoma indicate "that the number of cases of trachoma is now only 20 per cent of the number estimated five years ago," (2) and the U. S. Public Health Service has discontinued the hospitals at Hindman, Jackson, and Pikeville.

The mortality statistics present no fact more interesting and important than the entire absence of yellow fever and cholera from the "registration area" at the present time, and the almost complete absence of smallpox. Forty years ago the task of protecting mankind from yellow fever and cholera was quite hopeless, because our knowledge of these diseases was insufficient. With the demonstration in 1900 that yellow fever could be transmitted by but one species of mosquito and then only after the mosquito had fed on a yellow fever patient, mankind was given absolute control of this disease. With the demonstration in 1892 that Asiatic cholera was caused by a microbe occurring mainly in water or in foods contaminated by such water, absolute control of the disease passed into the hands of those communities which exercise proper supervision of the water supplies. With the demonstration in 1798 that vaccination controlled smallpox this disease vanished from communities which practiced compulsory vaccination. In the history of mankind there is no better demonstration of the power of knowledge.

The mortality statistics present another very interesting fact—that in Kentucky with an expenditure of less than one per cent of the amount spent in many other states the death rate from tuberculosis declined 40 per cent, while the death rate for the "registration area" declined 42 per cent. This indicates that lack of knowledge is our real handicap in fighting tuberculosis and, while it is important to sustain and develop those agencies which are used to fight this disease, it is much more important to stimulate investigation and study. In 1915 the Academie de Medicine, Paris, offered a prize of \$160,000 open to the world, for a sovereign cure for tuberculosis. (4) If other organizations were to offer similar prizes the sum total might be sufficient to challenge the scientific world in a manner which would produce the necessary result.

The war draft focussed public attention upon the occurrence of venereal diseases among young men. Among those drafted from Kentucky with the second million drafted men the occurrence of venereal disease was 3.8 per cent while the average for all the states was 2.81 per cent. (3) During the past five years public health officials have actively combated venereal diseases, yet the work is so new and the statistics so unusual that it is difficult to form a clear idea of the problem.

The Efficiency Commission of Kentucky states—"At the Reform School for Girls ninety-eight per cent of the inmates suffer from one or the other of these diseases (venereal) in an acute form." (1) The State Inspector and Examiner stated—"A girl suffering from a highly infectious venereal disease had exposed 64 men and boys during a period of three months," (2) and it is readily understood how the 67,324 cases treated by the bureau of venereal diseases occurred. At present public officials are attempting the treatment and cure of venereal diseases at a relatively great expense. The promiscuous young woman is always abnormal, frequently a high grade imbecile, sooner or later a source of infection to others and incapable of mastering her promiscuous tendencies through education or training. This young woman is the source from which venereal diseases spread and until she is quarantined as are other patients suffering from acute infectious disease, and until young men learn that their companions in vice are poor imbecile creatures, the expensive efforts of the public officials will be largely wasted. During the past five years the steady effort of public health officials have overcome all serious ob-

jection to quarantine of diseased women and when such persons are syphilitic, they may be rendered non-infectious by means of the newer arsenical remedies. This is real progress and, if during the next five years, similar results are attained with gonorrheal infection eventual victory over venereal diseases will be assured.

Infantile diarrhea and typhoid fever are mainly water borne diseases and readily controlled by communities which exercise proper supervision of the water supplies. It is most unfortunate that Kentucky with the highest death rate from these diseases spends less than a seventh of the sum expended in the treatment of venereal diseases, with the result that approximately 1,000 infants under 2 years of age die each year from infantile diarrhea.

During recent years the welfare of the child has awakened nation-wide interest. The Federal Government has officially recognized child welfare through the establishment of the Childrens' Bureau in the Department of Labor. In Kentucky the law requires sanitary and safe school premises, provided with pure drinking water, frequent inspections by the county health officer who must examine the children for defective eyesight, defective hearing, diseased tonsils, diseased teeth, and adenoids and if such conditions be found, report in writing to the parent or guardian requesting that such conditions be corrected. The results of child welfare work will be evident in the future in lowered infant morbidity and mortality, and the real value of the work can be estimated then rather than at the present time.

From a study of figures obtained from draft boards, school surveys, the non-effective rate in the army and health surveys it appears that about 6 per cent of a community are ill at any one time. If a community has one physician for each thousand persons he will have about 60 patients at all times, although it would be unnecessary to see many of these patients each day. The records of the State Board of Health show 2,836 physicians in Kentucky, which is one physician to about 850 persons. This proportion varies in different counties from one physician to 437 persons in Fayette County, to one physician to 3,885 in Knott County. There is one county in Kentucky, (Leslie) without a physician. In the other counties the number of physicians varies from two in Menifee County to 610 in Jefferson County, and there are 14 counties where patients are ten or more miles from a physician. Seven counties have but three physicians each, while five

counties have but five physicians each. During the past ten years the State Board of Health issued certificates to 490 physicians and of these 200, or 41 per cent settled in eleven cities and towns, while 80 per cent settled in 80 counties, leaving 82 counties in the state in which no physician has settled during the past ten years. Those who have studied the question consider it necessary that each community provide from one to two hospital beds for each hundred of its members. There are 80 hospitals in Kentucky having a total of 7,700 beds. (5) This is one hospital bed to 542 persons throughout the state. These hospitals are in 40 counties of the state, while 80 counties have no hospitals whatever. There are 121 public health nurses employed in 37 counties of the state. Of these nurses 93 are employed by cities and counties; 14, by the Metropolitan Life Insurance Company, 6 are employed by churches, and industrial and settlement organizations employ 3 each. In round numbers there are 1,600 trained nurses in Kentucky and as there were 67,302 births in 1923 the maternity work alone, if properly cared for, would require more than twice the number of trained nurses in the state.

With the exception of an unpublished health survey conducted by the U. S. Public Health Service in Mason County, no health surveys have been made in Kentucky. If, however, the figures obtained through health surveys in somewhat similar communities be applied to Kentucky some interesting results are obtained. It would appear that in Kentucky at any one time there are 150,000 who need medical treatment of one kind or another and that 120,000 of these are receiving no medical treatment whatever; that there are 60,000 cases of venereal disease, with 36,000 of them receiving no medical treatment, and 3,000 persons dying from syphilis each year, and that there are 1,000 insane and feeble-minded persons whose condition was caused by syphilis; that there are 20,000 maternity cases each year receiving no medical attention; that there are 67,500 school children with defective teeth, 18,000 with defective vision, and 4,500 with adenoids or diseased tonsils.

Truly a new spirit has breathed upon medicine creating new ideals of social service. That this spirit has breathed but gently in Kentucky is natural and yet—it has breathed and many agencies are working for the common good.

WHO IS RESPONSIBLE FOR THE INCREASE OF IDIOCY.*

By H. C. CLARK, Falmouth.

It has been said that in the Laboratories lies the hope of the future, the physical redemption of the race. Science is the friend of humanity as well as a good physician and must be depended upon equally in the hope of posterity. There are many serious problems concerning the race neither the Laboratories nor the Physician can eliminate alone, but legislation must be invoked to make possible our escape from an impending danger right at our door today, and from neglect of our duty we see from improper marriage, children born to become a burden to the state. And not one word from us of protest do we utter. If the Laboratories have their full swing the applicants for marriage license would have a Wasserman test as well as other tests made and a clean bill of health found before they could be united in marriage. The Laboratories and Physicians co-operating together have reduced the death rate, but neither the Laboratories or the Physicians can prevent the increased birth rate of idiots without different laws being enacted on the subject that will send every idiot to the operating room for sterilization instead of authorizing them to get married perpetuating their kind as is done under our present laws. I am acquainted with an idiot in my county who married an idiotic girl and they have produced five idiotic children, making seven in the family, all idiots. In my county we have seventy-six idiots and they are the most dangerous to the future physical and mental humanity, because all but eight are able to associate with other folks after meeting those of opposite sex who are mentally their equal and they should be sterilized. It is seldom if ever an idiot improves. I cannot recall one who has. They are hopeless and if the Physicians of our state will read this paper and take the subject seriously to heart we can have a law passed authorizing sterilization of idiots and morons. We do not know that there are more of this class in our county than there are in other counties. Estimated from the number we have there are over twenty-five thousand in the state and the numbering increasing. The slogan is *preventive medicine*. You hear it every day and this holds the only promise for the mental redemption of the race. What has been done by science in prevention of communicable diseases can with as great success

*Read before the Pendleton County Medical Society.

be done for the feeble minded by prevention. The operation is simple and not attended by danger. I know there are four feeble minded boys who are dangerous to society, a care to their families who have to watch them constantly and they should at least be sterilized. The law is a success in the states where they have the law in operation. If the word is passed along that an effort will be made to have the subject brought before the legislature at its next session, I am of the firm belief we can soon begin to experience a decrease in the birth rate of these unfortunate unpromising blights of humanity. This curse has been neglected too long. There are but few persons who realize how many idiots there are in their own neighborhood or county until their attention is directed to the subject. It is at our door. Confronts us now as but few other public questions. Will not be pushed aside nor can it be dodged. It is up to the physicians in every county in the state to exert their mental strength and political influence with the law makers to inaugurate a movement that will forever stop this curse on humanity. There can be no greater curse perpetuated against a child than to refuse it the right to be born right, physically or mentally.

Intracranial Hemorrhage in Infancy and Childhood.

—An analysis made by Sheldon of 10,150 consecutive postmortem examinations showed exactly fifty cases of intracranial hemorrhage in children under 12 years of age, giving a percentage of just under 0.5. Of the fifty cases, twenty-eight were extracerebral, twenty-two intracerebral. The distribution was: subdural, eleven cases; subarachnoid, sixteen cases; cerebral, sixteen cases; cerebellar, four cases; pontile and medullary, two cases, and epidural, one case. None were prenatal cases. In the majority of these cases, the intracranial hemorrhage was not diagnosed before death. One symptom that seems fairly common is the occurrence of convulsions. In this series a positive statement of convulsions was made in 59 per cent. The convulsions were seldom of localizing value, but the paralysis which followed in some cases corresponded more closely to the area of hemorrhage. The postmortem evidence shows that, although in some cases, notably those with malignant endocarditis, the situation and extent of the hemorrhage was sufficient per se to have resulted in death, in others the patient died because of the severity of the primary disease.

DIVERTICULA OF THE UPPER ESOPHAGUS.*

By CHARLES G. LUCAS, M.D., Louisville.

Routine use of the Roentgen-ray in regular, systematic examination has proven that diverticula of the esophagus are more common than was formerly supposed. While all parts of the esophagus may be the subject of this condition, the one most often found is that in the cervical region—the pressure diverticulum. The traction diverticulum usually affects the thoracic part of the esophagus.

The pressure diverticulum, first described by Zenker and Ziemssen, is usually found in the cervical portion of the esophagus, behind the cricoid cartilage on the posterior wall at the juncture with the pharynx. Judson states that:

"This weakness in the wall of the esophagus is the result of the arrangement of the musculature of the lower end of the pharynx and the upper end of the esophagus. During the act of swallowing, considerable pressure may be exerted from the inner part of the esophagus and it is quite natural that the inner coats might be gradually forced through a chink in the outer coats and in this way form a simple pouch. The pouch would tend to increase in size each time and intraesophageal pressure increased until it became large enough to hold accumulated food and mucus from the esophagus. The accumulated food would also tend to increase the size of the pouch."

In contradistinction to diverticula of other portions of the gastro-intestinal tract, these pressure diverticula contain only the mucous membrane and submucosa in the hernial sac.

The symptoms depend on the size and position of the diverticulum and usually do not develop until about the fiftieth year and beyond. In some cases increasing dryness of the pharynx attended with cough is first noted. This may persist for quite a while, followed by difficulty in swallowing and regurgitation of food. In some cases, a choking sensation is noted, while in others, when the diverticulum has attained some size and is filled, the patient may complain of a "lump in the throat." In a case seen recently where the patient, over fifty, stated that her symptoms had developed six years before, there was constant eructations of gas, sour stomach, much mucus and constant indigestion with feeling that "nothing would pass through normally." This patient had to stop

*Read before the Jefferson County Medical Society.

during a meal to eructate by pushing the finger in the throat to relieve fullness. She had many choking spells. Excessive secretion of mucus is often marked. This has been a pronounced symptom in a case under observation for several years. Bad breath due to decomposing food in the sac is often noticed.

Constant indigestion has been a feature in one of the cases in this report, and since being told of his condition, this patient has often noticed a gurgling noise in the sac, especially on manipulation. Another patient had pressure and fullness in the neck each evening and by manipulating and rolling the neck could express some of the contents of the sac and get some relief. Pain is not usual unless ulceration occurs, but this may follow the decomposition of food or may be the result of irritation from hard particles of food or seed in the sac. As a result, periesophagitis may ensue with the formation of abscess and rupture into the surrounding tissues. In some cases with a large diverticulum, the pressure from a full sac may be so great as to bring on serious respiratory symptoms with increased difficulty in swallowing. Under such circumstances vomiting may be induced for relief. A visible or palpable tumor occurs only when the sac is large. In thirty-five cases reported by Judd, ten had a visible or palpable tumor in the neck; in seven cases, it was on the left side; in three on the right.

Where the sac is small, there is usually no interference with nutrition, but where the sac has attained considerable size and is filled with food, the lower esophagus may be shut off or the esophageal lumen so obstructed that only liquid food will pass. In such cases, weight loss may be marked.

Occasionally, a case may be seen where there are no symptoms referable to the esophagus. Judd reports the case of a man, aged forty-two, who had been treated for "stomach trouble" for years, in whom there were no symptoms of esophageal involvement. An x-ray examination of the stomach was negative but revealed a diverticulum in the lower third of the esophagus.

The diagnosis in all my cases has been made by means of the x-ray. In all gastrointestinal fluoroscopies, the esophagus is always studied in all positions. Where a diverticulum is suspected or there is any interference with the passage of the usual barium mixture, a thick barium mucilage of acacia mixture is given in tablespoonful doses. Several films are then made with the patient in the same position. It is the ideal procedure after this method, to employ the

esophagoscope and, in the hands of experienced operators, it is of the greatest service. To quote Jackson: "A radiograph is very valuable and should always be made, but to rely upon it to the exclusion of esophagoscopy is to take a chance of serious or fatal error, as mentioned in connection with spasmodic and organic stenoses and malignancy." It is particularly in those cases of dilatation above stricture that the esophagoscope proves its value.

Differential diagnosis must be made from simple stricture, cardiospasm, and carcinoma. In the former, the exciting cause, the gradual development of symptoms, and the characteristic x-ray appearance, are usually sufficient for the diagnosis. In cardiospasm, the long history, the large amount of fermenting contents in the sac, the inability to swallow liquids, and the x-ray appearance of the greatly dilated esophagus exclude diverticulum. In carcinoma, the peculiar x-ray appearance with the esophagoscopic picture, the rapid loss of flesh, the progressive inability to swallow solids, semi-solids and finally liquids, all help to differentiate.

The treatment is surgical. From a medical standpoint, careful attention to the diet, the avoidance of coarse food and alcoholics will make the patient more comfortable. In some cases, it has been necessary for the patient to try various positions in swallowing. If much mucus and the evidence of decomposing food is present, lavage of the esophagus, and, if possible, the thorough cleansing of the sac, gives much relief. I have found the Levin duodenal tube of great service in this condition.

In the Mayo Clinic many cases have been operated. To quote Judd again: "The two-stage operation seems to give the best results. In the first stage the sac is freed from the surrounding tissue, the neck of the sac sutured with a few catgut sutures to the sterno-mastoid, the wound in the neck closed around the sac, which is allowed to project from the wound. Neither the diverticular sac nor esophagus is opened. After ten or twelve days, the sac is excised and the opening in the esophagus and wound in the neck closed."

In the Gaub-Jackson method, under tracheal anesthesia, the esophagus is exposed by external dissection, the esophagoscope is introduced into the diverticulum and the pouch presented in the external wound. The bottom of the sac is seized with forceps after being dissected from the surrounding tissue, the esophagoscope withdrawn a short distance and then passed downward the

esophagus beyond the diverticular opening. Under these circumstances, the redundant sac is amputated without involvement of the wall of the esophagus.

In the past few years, I have encountered a number of pressure diverticula and wish to report three cases:

CASE I. Mr. Y., aged 56, had the usual diseases of childhood without untoward incident. He also had chills and fever. In 1899 he had a very severe attack of grippe. Since then he has had several attacks, but none was severe. At 36, he had a severe tonsillitis and has had one attack since. He has not been confined to bed in the past twenty years, except for three days during the influenza epidemic. He had complained of "indigestion" off and on during the past thirty years, large meals and alcoholic combinations predisposing. He is awakened nearly every night with gas and sour stomach. Soda gives relief. On awakening he feels well and has an appetite for breakfast. About 11 a. m. he is troubled with gas and gets relief from soda. This is repeated late in the afternoon, but he is comfortable after dinner. If solids are taken the patient has noticed occasional difficulty in swallowing and water is often taken to assist in the act. Pills appear to stick, occasionally. He is conscious of a lump in the throat and has noticed that pressure on the neck may bring bubbles of gas into the throat. At times he has some pain in the same region and also in the back of the head. He is somewhat constipated. The stools small, but of normal color. He has lost no weight.

He was obliged to make a trip West and at my request he stopped in Chicago to consult Dr. Frank Smithies. At this consultation, among several pathological conditions, a diverticulum about the size of a twenty-five cent piece was found in the cervical portion of the esophagus behind the cricoid cartilage on the left anterior wall. Suitable recommendations for this and other pathological conditions found at this examination were made by Dr. Smithies, but the patient is one who is hard to control. The Wassermann was negative.

CASE II. Mr. M., aged 69, had always led an active life. Previous history not incidental. For several years before he consulted me, had complained of "indigestion." For the past twelve months prior to consultation has noticed discomfort particularly at night, and was troubled with a large amount of mucus. Beyond moderate enlargement of the prostate and slight cystitis was

otherwise in fairly good shape. Fluoroscopic examination showed a moderate sized diverticulum on the posterior wall slightly to the left. This patient had a prostatectomy done about a year ago. Rest in bed for several weeks apparently relieved some of the symptoms due to the diverticulum but after getting up and around for a time, all the old symptoms returned. A second examination eighteen months after the first showed a distinct enlargement of the diverticulum and he has now decided to have it removed.

CASE III. Mr. L., aged 58, was first seen in 1909 complaining of "indigestion." No x-ray study made at that time. In October, 1924, patient then 73 years of age, consulted Dr. Abell, through whose courtesy I am allowed to report the case. His chief complaint was inability to swallow food, which had been getting gradually worse for the previous three years. Loss in weight twenty-five pounds. Patient was decidedly emaciated. During the fluoroscopic examination by Dr. Henry a very large diverticulum of the upper esophagus was found with a capacity about eight ounces.

CASE IV. (Reported for Dr. Abell). Mr. W. M. M. consulted him on December 2nd, last. He was 45 years of age and beyond the fact that he had had the usual diseases of childhood and typhoid pneumonia at 33, his previous history was uneventful. His chief complaint was inability to swallow and the effects of starvation. His usual weight was 180 but for two years previously had averaged 165. Weight at time of examination was 113. He stated that for two years his condition had been getting worse. His throat would become dry and sometimes the sputum would be blood-streaked. He could not swallow solid food and lived on milk and malted milk. If he took a full glass of milk it was vomited very shortly. Food or fluid returned very shortly after ingestion. Had never had spasmodic pain and had not noticed tarry stools except for a week or so two years before. His blood pressure was 84 over 64. Pulse 90. Knee jerks and pupils respond normally. There was much dentistry. Tongue furrowed, thick and coated. Mucosa of palate and pharynx is markedly infected. Submaxillary and salivary glands are palpable. Heart, lungs and thyroid were negative, also the abdomen. Blood showed a beyond a trace of albumin. The X-ray report states: there was a large esophageal diverticulum. Cannot retain large quantity of the barium mixture. Took five or six ounces and this about half filled the sac. None of the

barium passed into the stomach.

Three unsuccessful attempts were made to pass the esophagoscope. Several efforts were made to have him swallow a silk thread but these also failed. A gastrostomy was done by Dr. Henry under local anesthesia. He did very well following the operation and gained some in weight and strength. On January 12th last the first stage operation for removal of the sac was done and the second stage operation on January 24th. I think it is of interest to append the operative notes herewith.

January 12, 1927: Five-inch incision along anterior border right sterno muscle extending from ring of hyoid bone down to sterno-clavicular-articulation. Sterno-mastoid with underlying carotid vessels retracted outward. Trachea, larynx and thyroid retracted inward after first ligating superior and inferior thyroid arteries. Diverticulum readily identified by means of large catheter inserted into same through mouth. Diverticulum is separated from its bed in chest, dissected free to its neck, twisted on itself and carefully wrapped with rubber tissue. Entrance to mediastinum loosely packed with gauze and wound partly closed with catgut and dermal sutures.

January 24, 1927: Wound re-opened and diverticulum removed by excising through its neck. The mucosa of neck is scarified with knife and brought together with purse-string sutures of chromic gut which are placed inside neck of sac. Mucosa is further scarified with knife and amputated edges of sac brought together after which the muscular wall of oesophagus is united by superimposed layers of interrupted catgut sutures, overlying muscles brought together with catgut. Drainage made with roll of rubber tissue and skin closed with dermal sutures.

He did very well after this last operation and a week ago wrote that he had gained 36 pounds, was feeling well and able to take all kinds of food.

Operations: Case I. was subjected to the Jackson-Gaub operation, but the results have not been thoroughly satisfactory. A small sac remains attached to the oesophagus, but the base extends above the opening instead of below as before. This patient has much trouble taking either grapes or pills, but otherwise is more comfortable than before.

Case II was subjected to the two-stage operations and has had a perfect result.

Case III. was in such condition that only a gastrostomy could be considered and he lived some six months following the operation in fair comfort.

Case IV. has had perfect results and considering the size of the sac, the length of tie the condition lasted, and the difficulties of such an operation. I think Dr. Abell is to be congratulated on the perfect result.

DISCUSSION

M. J. Henry: I do not know very much about esophageal diverticula, but the last case reported by Dr. Lucas left an indelible impression upon my mind. When the patient came under observation and roentgenographic films were made I was surprised at the great size of the diverticulum. I do not know the largest esophageal diverticulum recorded, but six ounces of barium mixture introduced in this case did not more than half fill the sac.

An interesting feature about the case is that there was no tumefaction about the diverticular mass. Gurgling could be easily heard when he attempted to empty the diverticulum by pressing on the side of his neck. He had more or less distress while the sac was filled with food, or fluid.

Another interesting feature about the case is the ease with which the diverticular sac was elevated and brought into the neck incision. It was very thick. We were fearful that removal would be attended by difficulty because of the size of the diverticulum. With catheter introduced into the sac through the mouth its extent was readily determined and with blunt forceps it was easily elevated.

Plummer in most of his articles sneaks of having the patient swallow a silk thread in making the diagnosis of esophageal diverticulum. We tried this method on several occasions in this case but were unsuccessful. Dr. Gaylord C. Hall tried twice to introduce the esophagoscope and failed. A gastrostomy was then performed, as stated by Dr. Lucas, under local anesthesia.

Although the history shows this man's weight had receded from 180 to 113 pounds, the fact is that during the last four years he had lost 112 pounds in weight. He weighed five years ago over 200 pounds. At the time he came under our observation his weight was 113 pounds. When dismissed from hospital he had gained 14 pounds. The last report from the patient shows that he has gained 36 pounds since the operation.

This case has taught one important lesson, i.e., that the operation of removing an esophageal diverticulum is not so difficult as formerly believed, nor is it one to be especially feared.

Gaylord C. Hall: I was very much interested in Dr. Lucas' report. I had the pleasure of seeing the last patient he mentioned. In cases of esophageal diverticula I believe the difficulties of esophagoscopy are increased in direct pro-

portion to the size of the sac. It is possible in small diverticula to find the subdiverticular portion of the esophagus, but with increase in size of the sac and consequent kinking of that portion of the wall great difficulty is encountered, so that when one finds a sac of the size that this man had it is practically impossible to locate the subdiverticular opening. We tried this on two occasions. The man was a splendid patient, there is no criticism of his action during the examination, it was simply a difficult case from a mechanical standpoint. The man was in desperate condition from dehydration and lack of food, and after two attempts at esophagotomy without success, we concluded that gastrotomy was the proper procedure and later excision of the sac.

I saw the patient after the final operation. Am glad to hear he has gotten along so well.

ARTERIOSCLEROSIS AND HIGH BLOOD PRESSURE.*

By S. S. AMERSON, Georgetown.

In bringing to you this great subject in this combination, I couple them together because they are so closely associated and so often combined. And I do not expect to give you any thing new, nor all the known facts on the subject (as I do not know them all), but a few that will stir and freshen our minds to thinking a little more than perhaps we are accustomed to doing, and if I do that, I will be rewarded.

Arteriosclerosis, chronic arteritis, or, when smaller arteries are involved, arterio-capillary fibrosis, is a condition characterized by an increase in connective-tissue formation accompanied by degenerative changes, necrosis, and calcification. These later may be circumscribed or diffuse. The fibrous formation occurs chiefly in the outer coats and is referred to as sclerosis, the degenerative progresses involve the intima mainly and are spoken of as Atheroma.

Symptoms: It is generally accepted that pathological lesions of the blood-vessels are present in the greater majority of people over 50 years of age, especially males. The involvement may be of some portion of the cardiovascular system, or of the entire system, a local change in the aorta or a widespread fibrosis of the smaller vessels. In consequence of the fibrous overgrowth and degenerative process occurring in the walls of the vessels there must be more or less interference with the proper supply of food reaching the tissues. There must then be found symptoms of disturbance of nutrition as well

as of the primary underlying cause that brought about the fibrosis. In as much as the blood-supply to the different organs of the body varies greatly according to the importance of the tissue, the symptoms of arteriosclerosis will vary also with the organ involved.

There are symptoms of arteriosclerosis which occur early, while the progress of the disease can still be arrested. The arteries are less elastic, the contractility of their muscular coats is lessened, and as a result the regulation of the course of blood is impaired, the phenomena may be persistent or may appear only as the result of labor or fatigue.

1. General, such as fatigue on slight exertion, accompanied perhaps by painful sensations, as in the case of a man who suffers from headache after a long walk, lassitude or perhaps discouragement.

2. Vasomotor of the patient may be flushed, or on the contrary, pale, and in some cases there is an inability of the vasomotor innervation. Some persons pale in the morning and ruddy in the evening.

3. Nervous, shown in aptitude for work, modification of character, headache, abnormal sensation in limbs with some difficulty of movements, neuralgic pains, vertigo, insomnia, and neurasthenia.

4. Loss of hearing.

5. Ocular troubles, such as the development of arcus senilis on the cornea, thrombosis of the central artery of the retina and spasms of the smaller retinal arteries.

6. Respiratory dyspnea induced by comparatively slight exertion, and emphysema, the true cause of which is not easily to be recognized unless its possible relation to arteriosclerosis is considered.

7. Edema of the legs, not very marked in the absences of cardiac or renal disease.

8. Cardiac troubles, such as palpitation, sometimes associated with angina, in some cases tachycardia.

9. Renal symptoms, may be great or of little consequence. The arteries of the body is divided into three sizes, large, middle-size and small, possessing three coats, internal middle and outer. The tunica, intima, or inner coat consists of three layers: An endothelium lining, in contact with the blood, made up of delicate nucleated cells joined together by a cement substance. This endothelium, slightly modified in different situations, lines the entire cardiovascular apparatus, and its integument is of the greatest importance in preventing coagulation.

2. A sub-endothelial layer of branched

connective-tissue corpuscles with intervening cement substance.

3. A continuous layer made up of felt-work of fine elastic fibers with small openings therein, the noted fenestrated membrane of Henly. The tunica media or middle coat, consists in the larger arteries, of alternate layers of elastic fibers and unstriated muscle fibers arranged circularly. Predominating the more in the larger arteries.

The tunica adventitia, or external coat, consists of connective tissue possessing a large number of interspersed elastic fibers, together with blood vessels and lymphatics and nerves. The blood vessels serve to nourish the walls of the vessels.

Vasomotor nerves run by the side of the vaso vasorum and over many of the larger vessels. Variation of the thickness of the outer coat in different situations of the body have been explained as adapting to resist the pressure of joints, and visceral and muscular movements.

With this brief description of the structure of the blood vessels we may more readily understand the pathological changes of the action and modification of the circulation. In taking up the symptoms caused by the variations of the circulation in the blood vessel walls, we must take into consideration the blood-vessels at the seat of the change, the heart and its tissue. As a result of arteriosclerosis there is a varying degree of elasticity of the blood-vessels, either in being increased, as in aorta where the wall has become much thinner, or in being diminished, as in those areas where the vessels has become rigid from the deposit of lime salts. If the rigidity has been increased there will be a greater resistance than normal to distention during the systolic increase of the blood-pressure. If the rigidity is not marked the normal distention may be brought about as a result of increased contraction of the left ventricle. On the other hand, the systolic contraction may be unable to cause any distention. If the healthy heart muscle is able to overcome the resistance there will be an hypertrophy of the left ventricle. As one of the chief characteristics of the connective tissue is to contract, we will find that the lumina of the arterioles will become smaller and smaller. Consequently the blood-pressure will tend to increase with an accompanying increase in the hypertrophy of the left heart. If the rigidity is due to a deposit of lime salts, as occurs commonly in the aorta, there may be no alteration in the heart if compensatory changes can take place in the peripheral circulation. As atheromatous and cal-

carious changes are commonly associated with old age, when the integrity of the myocardium is interfered with, the heart in such an involvement of the aorta will be flabby and somewhat dilated. This will also be accompanied by a fall in blood-pressure. If the calcification has involved many of the peripheral vessels as well as the aorta there will be resistance exerted that cannot be overcome by an increased heart action. Consequently the left ventricle not only will hypertrophy, but will dilate with a thinning of its walls. If the vessels lose their elasticity and rigidity, dilatation must be the result, as a result of the diminished elasticity of the vessel wall there is developed an increased tendency to rupture. This depends upon a failure of correspondence between the tearing stress exerted by the blood pressure and the power which resides in the modified vessel wall to resist that stress. In calcification of the aorta the rigid vessel gives way, primarily because the tearing stress to which it is exposed is greater than that which the healthy vessel is called upon to withstand. In a sacular aneurism the tearing stress exerted by the blood-pressure is actually lower than in the vessel upon which the aneurism is seated, and diminished with enlargement of the sac.

The velocity of the flow of blood in the proximal and distal parts of the vessels may be diminished. The pressure in the proximal portion may rise, and the pressure in the distal portion fall. These changes will however be modified according as to whether the vessel involved has anastomosing branches or whether it be a terminal or end artery. If the collateral circulation is free, the nutrition of the tissue is unaltered. If the collateral circulation is poor, the nutrition of the tissue is impaired. If the artery is terminal, local anemia is complete and bloodless necrosis ensues. If regurgitation of blood from neighboring capillaries or veins takes place, the result is the formation of a hemorrhagic infarct.

When considering the symptoms it must be borne in mind that they depend largely upon the organ involved and upon the extent of the involvement. The disease may start as a defect of metabolism before the production of organic changes in the circulation system. Some think there is a prodromal and curable stage at this point. A stage of toxemia causing spasm of the arteriocapillary system, increased peripheral resistance, increased functional activity of the heart, and increased pressure in the arteries, but not necessarily change in the vessel walls.

In many cases there may be a widespread involvement without any disturbance of the

general health, the victim seeming quite vigorous. The arteries will show an increased hardness, but no organ may be sufficiently impaired to give rise to symptoms referred to it. The patient may be able to carry on work, mental or physical, but the discovery of his condition may save him by changing his mode of living so as to check the progress of the disease. In cases where this is not discovered the patient may go on till he suddenly breaks down. At this time the peripheral arteries will be found to have hardened, be torturous, blood-pressure anywhere from 180 to 300 millimeters. Cardiac hypertrophy may be present, and there may be albumen in the urine, with casts.

These local manifestations can be considered under the following headings: (1) cardiovascular symptoms; (2) nervous; (3) renal; (4) pulmonary. I will not have time to fully discuss all these phases, but will bring out a few points of each. Cardiovascular: In the first stage, owing to the increased peripheral resistance, a pure hypertrophy of the left ventricle occurs, and of the right ventricle to a less and variable degree. The dullness of the heart is increased, apex beat displaced outward and downward. There may be reduplication of both first and second sounds, and the latter over the second intercostal space at the right accentuated and roughened. The hypertrophied cardiac muscles may undergo various changes due to the interference with nutrition. The heart has more work to do and its nutrition impaired; consequently parenchymatous, fatty and fibrous changes in the myocardium, followed by dilatation of the ventricle. The patient complains of palpitation, dyspnea and shortness of breath on exertion. During this the apex beat will be forcible and pulse high tension. A mitral murmur may appear, the veins are obstructed, urine scant and high colored, when dropsy may appear. The latter may be due to alteration in the vessels and to weakness of the cardiac muscles. Interference with the coronary arteries lessens blood supply to the myocardium instead of an increase as should be. Many attacks may occur with seemingly normal conditions intervened before fatality. Angina pectoris is a very distressing symptom of this malady. Where the arteries are affected in any part of the body there is muscular cramps, at times very distressing. Should it be in the arteries of the brain it is often fatal. In old people it is often the cause of senile gangrene.

Under the head of nervous disturbance in arteriosclerosis comes many varied symptoms. There is usually a sudden onset of pain, frequently very violent, loss of power in the

part supplied by the obstructed vessel, the pain usually subsides in a short time to be renewed if a second emboli occurs, usually when the severe pain subsides to a constant aching. With this comes loss of power and motion to greater or less extent. In addition to the pain there may be a pallor, coldness, tingling or numbness, weakness or complete cessation of peripheral pulse, or violent cramps. If collateral circulation does not become established gangrene will result. The symptoms may increase and decrease as the condition of the heart suffices or fails. Should the greater troubled arteries be those in the brain and not severe enough to be fatal, all sorts of nerve troubles may occur.

Renal symptoms: Generally the arteriosclerotic kidney is a red, beefy organ, which is firm, hard, and dark in color; not at first reduced in size, sometimes, indeed, slightly enlarged. Very often with this kidney there may be few or no urinary symptoms. But later on they show, the specific gravity being very low, sometimes albumin very scant, at others in abundance with tube casts. In consequence of the renal changes there may appear many symptoms indicating a special involvement of this organ by the sclerotic process. Dropsy may be absent for a long time. The most alarming symptom is that of uremia.

Pulmonary Symptoms: Other than uremic asthma, are bronchitis and emphysema, with failure of the right heart. Cases are on record where the pulmonary artery has shown very extensive atheroma and sclerosis, with but little involvement of the systemic circulation.

Diagnosis: A careful consideration of the foregoing will aid much. According to some authors the cardiac points of arteriosclerosis is well marked. Thickening of the peripheral arteries; signs of hypertrophy of the left heart, apex beat to the left and downward, the thudding first sound, heightened blood-pressure, slight and variable amount of albumin, torturous temple arteries, and if not visible in the brachial arteries may be found by palpation. Care should be taken not to mistake a simple increase in the tension for thickening in the vessels. In making the examination the vessel should be firmly compressed so as to obliterate the pulse and then feel below the point of pressure or empty a section of this artery and palpates between the points of pressure. Sometimes an emphysematous lung may cover the heart so as to make it difficult to palpate it. The pulse is prolonged, hard, and tense, with a very characteristic sphygmogram. A slow oblique ascent, broad top, a slow descent, and absent diastolic rise, due to lost elasticity in

the vessels. Very important is the blood-pressure, if persistently over 160, which is the boundary, it is very pathognomonic, and there are many cases when we first see them 200 and above. In all these cases the pulse pressure is very important, as it is not always in accordance with the blood pressure, in no case should it be less than 20, low pulse pressure is really more dangerous than high blood-pressure, and should be carefully noted in all cases at all times.

Etiology: There are various causes of arteriosclerosis; wear and tear of ordinary existence, intoxications, infectious diseases, and those conditions that tend to keep blood tension high. Arteriosclerosis is thought of as a disease of old age, but not altogether so, as these conditions may bring it on in early life, or at least middle life, as is shown in many cases by overeating, strenuous mental or physical labor, or anything that keeps the blood contaminated with abnormal toxins.

Treatment: By far the hardest of all points of this malady for the doctor. Unfortunately we have no specific. Find the toxine, if possible, that is causing the malady and by all means stop it, so as to arrest the progress of the malady. Restrict the diet, as that is most often the cause and overeating will at least help it along. The patient should be taught to be temperate in all modes of life, work and exercise as well as eating and drinking, warning in the keeping of the pulse pressure at least 20 and above is more essential than lowering the high blood pressure.

Sedimentation Rate of Erythrocytes in Tropical Diseases.—Newham's study disclosed the fact that the rate of sedimentation of red blood corpuscles varies markedly in a great variety of disease conditions; however, little value can be placed on the test as an aid in differential diagnosis. It would appear that in all cases showing increased rapidity of sedimentation there is some concomitant derangement of the liver. Rapid sedimentation is not dependent in any way on the particular blood group to which the blood belongs, although it appears to occur in any disease condition associated with anemia. The cause of the phenomenon does not appear to reside in an increased proportion of fibrinogen in the blood, but in some property of the corpuscles rather than in any particular property of the plasma. The author believes that it is probable that the phenomenon of rapid sedimentation of erythrocytes is due to a combination of both physical and chemical changes.

TWO UNUSUAL INJURY CASES.*

By ADOLPH O. PFINGST, M.D., F.A.C.S.,
Louisville.

I would report two cases—more in the nature of curiosities than from a scientific standpoint.

CASE 1.—A messenger boy, aged 16, while in a fight was injured in the left temple. The injury seemed trivial to the boy and evidently also to the druggist to whom he applied for first aid, who covered a slight wound in the left temple with adhesive plaster and advised that he would need no further treatment.

He applied at my clinic for treatment four and one-half months after the injury with the history that he had suffered no pain or inconvenience since the injury but that his left eye had slowly turned outward and that only recently he had discovered accidentally that the vision of the left eye was defective.

A rather small frail boy weighing 130 pounds revealed a slight divergence of the left eye with some deviation upwards and an inability to rotate the eye inwards beyond the median line. The left pupil was somewhat wider than the right and responded promptly to light. The fundus was somewhat pale, the optic nerve atrophic, the veins and arteries apparently normal. The eye was blind. The right eye was normal and had perfect vision.

In the left temple, at about 2½ cm from the outer canthus, a narrow vertical scar 13 mm in length was visible. X-ray examination revealed a well defined shadow extending transversely across the left orbit and ranging slightly downward, to all appearances indicating the presence of a knife blade in the orbit.

Under general anesthesia a large flap was made over the left temple as is employed in the Kroenlein operation, the masseter and temporal muscles divided at their attachment to the external angular process and malar bone and rolled back. About 1½ cm from the orbital edge the end of the foreign body was uncovered, projecting slightly above the level of the squamous bone. This was grasped with difficulty with automobile pliers and after loosening it with a rocking motion it was readily extracted.

It proved to be a rusty knife blade, 4 cm long and 13 mm wide. The wound healed without incident and without any reaction in the eye.

*Read before the Louisville Medico-Chirurgical Society,



Case No. 1

CASE 2.—Male, aged 29, applied at the clinic with the history that he was stabbed in the forehead on the left side 13 months previously while in a drunken brawl. He stated that when he came out of his intoxicated state he learned that he was in jail. The jail physician informed him that a piece of knife blade had been removed from a wound in his forehead and that the wound had been closed by suture. The wound healed without incident and he was under the impression that all was well with him. Three weeks before I saw him he took part in another fight during which he was struck on the left side of the nose. Shortly after this injury he noticed a circumscribed swelling of the skin on the left side of his nose near the orbital rim. This ruptured spontaneously after which the patient could with his finger feel a hard substance in the wound.

Objective examination revealed a scar about 12 mm long in the left brow extending from the junction of its median and middle third towards the median line. About 4 cm lower down, below the inner canthus, a small fistula was seen on the side of the nose. An inserted probe came in contact with a hard metallic substance. The eye balls appeared normal and freely movable. X-ray examination revealed two vertical shadows along the inner edge of the left orbit, each 2 cm long



Case No. 2

and 6 mm wide, separated by a narrow gap. The lower shadow tapered to a point downward. Other laboratory tests disclosed nothing of interest except that there was a plus three reaction to the Wasserman test. Functional test disclosed perfect vision, 20-15.

Under novocaine anesthesia an incision was made at the brow over the point of the original injury and without much difficulty a piece of a knife blade was removed. The fistulous opening below the inner canthus was enlarged and a similar but pointed piece of a knife blade was removed. The upper wound was closed and a drain introduced into the lower. Both wounds closed in a week.

Whereas these cases do not offer much from a scientific standpoint, the fact that in both cases large foreign bodies were carried for a long time without causing suppuration and that their presence was unknown to the patients, is of interest. The similarity of the cases is noteworthy.

Serum Calcium in Pulmonary Tuberculosis.—

Seventy cases of pulmonary tuberculosis were examined by Brockbank and the serum calcium value was found to vary between 8.6 and 12 mg. per hundred cubic centimeters, the normal value being 10 mg. per hundred cubic centimeters, the normal value being 10 mg. per hundred cubic centimeters of serum. When the cases were graded according to their severity it was observed that, on the average, the calcium was decreased in quantity in the serum when the disease was acute, and that it was increased when the disease was healed, with proportionate results in the intermediate stages. The difference amounted to 20 per cent. The serum calcium was not diminished in patients who are coughing up blood as compared with patients in a similar stage of the disease but without that symptom.

Artificial Light Therapy in Infancy.—

Observations extending over thirteen months were made by Mackay on the effects of treatment with the mercury vapor quartz lamp on the health of infants. The infants were outpatients, were artificially fed, came for the most part from poor and overcrowded districts, and were subnormal in general health and in weight when they came under observation. The series treated with light numbered sixty-six, the controls 137. All were given cod liver oil during the winter with a view to eliminating rickets and spasmophilia as a complicating factor from the investigation. No objective evidence was obtained that light treatment was of benefit to the health of the infants under consideration.

WOMAN'S AUXILIARY NOTES

AT THE SOUTHERN

The annual meeting of the Woman's Auxiliary to the Southern Medical Association was held, November 14, 15, 16, 1927, in Memphis, Tennessee. A large number of representative members and guests were present.

Charming entertainment was provided by the Memphis physicians and their wives under the able direction of Dr. P. W. Tombs. This included a delightful luncheon for which 450 covers were laid at the Nineteenth Century Club in honor of the President, Ex-Presidents and officers of the Woman's Auxiliary to the Southern Medical Association. Mrs. B. F. Turner of Memphis proved a gracious toastmistress. Following a cordial message of greetings, Mrs. Turner presented the guests of honor. These included Mrs. O. M. Marchman, Dallas, President; Mrs. A. T. McCormack, Louisville, President-Elect; Mrs. John B. Fitts, Atlanta, Secretary, and Past-Presidents, Mrs. E. H. Cary, Dallas, and Mrs. D. J. Williams, Gulfport. Also, the following officers of the Woman's Auxiliary to the American Medical Association: Mrs. John O. McReynolds, Dallas, President; Mrs. Allen H. Bunce, Atlanta, President-Elect; Mrs. E. V. DePew, San Antonio, Secretary; Mrs. Irvin Abell, Louisville, Treasurer; Mrs. F. P. Gengenbach, Denver, Past-President. The guest who came the greatest distance for this conference was Mrs. Hugh Greenwood of Maracaibou, Venezuela, South America. Twenty-seven registered from Kentucky.

During luncheon, a delightful musical program including many of the old favorites was given by a string quartette.

Following the luncheon, the guests enjoyed an art exhibit of "Celebrated Pioneer Women." This exhibit was interesting and unique, and had been especially arranged for this occasion. A sight seeing trip through the Club House was inspiring for here we found that Memphis women enjoy club life de luxe.

A most enjoyable musicale by the Beethoven Club followed by a reception, was given Tuesday evening at the Chisca Hotel. Here, honors were even between the very excellent men and women musicians of Memphis.

Because of the absence of the President, Mrs. Stewart R. Roberts, Atlanta, due to acute illness, and absence of the Vice-Presidents, the Executive Board elected Mrs. O. M. Marchman, Dallas, President to preside over the Memphis meeting, with Mrs. John B. Fitts, Atlanta, Recording Secretary.

Mrs. Marchman gallantly stepped into this emergency and presided graciously and masterfully throughout the session.

The annual meeting was held Wednesday morning in the Italian Room, Peabody Hotel.

Beside the regular business and the reports of the officers and the delegates from the several states—always most interesting—two inspiring addresses were made; one by Dr. J. S. Horsley, Richmond, President of the Southern Medical Association; and one by Dr. Wm. D. Haggard, Nashville, Past-President of the American Medical Association. Unfortunately, space forbids a resume of these very excellent addresses.

During his speech, Dr. Haggard expressed the hope that before this convention adjourned, Tennessee, too, would have its organized Woman's Auxiliary. At the close of his speech, Mrs. A. T. McCormack suggested that a vote of the Tennessee women present be taken to determine whether or not they wished to organize. The chair called for the vote of the Tennessee women who voted unanimously for an organized Auxiliary. Mrs. McCormack then moved that the meeting recess, allowing Dr. Haggard and Mrs. John O. Reynolds, President Woman's Auxiliary, American Medical Association (and a former Tennessean) to assist with the organization of this new State Auxiliary. Following the election of a temporary chairman and secretary the Tennessee women, together with Mrs. McReynolds, retired to an adjoining room to perfect their organization.

Later, they returned enthusiastically reporting a full corps of officers and with arrangements made for calling the Memphis and Shelby County women together to organize the Shelby County Auxiliary at an early date the following week. It was most dramatic, this birth of a new state unit, in the presence of so many notable representatives from State, National and Southern Auxiliaries, together with a Past-President of the American Medical Association, and the Woman's Auxiliary to the Tennessee State Medical Association was given a genuine welcome. Judging from the interest and the enthusiasm of these Tennesseans, we who have been longer affiliated with the Auxiliary, may look to our laurels, else the Volunteer State will leave us far behind in progress and achievement for, when Tennessee starts she goes.

With grace and dignity, as the last act of her brief administration, Mrs. Marchman installed the new President, Mrs. A. T. McCormack. Mrs. McCormack responded in a few words, expressing her appreciation of the honor and urging closer coordination between the several State Auxiliaries with the Southern and with the National bodies.

Following the report of the Nominating Committee, the new officers were presented, Mrs. C. W. Garrison, Little Rock, Arkansas, President-Elect, making the speech of acceptance. One new office, that of Poet-Laureate, was voted to Mrs. E. H. Cary, Dallas, Texas. The new officers are:

President—Mrs. A. T. McCormack, Louisville, Kentucky.

President-Elect—Mrs. C. W. Garrison, Little Rock, Arkansas.

1st. Vice-President—Mrs. O. M. Marchman, Dallas, Texas.

2nd. Vice-President—Mrs. M. H. Bell, Vicksburg, Mississippi.

Treasurer—Mrs. W. K. West, Oklahoma City, Oklahoma.

Recording Secretary—Mrs. J. H. Brawner, Atlanta, Georgia.

Corresponding Secretary—Mrs. J. W. Sams, Crestwood, Kentucky.

Parliamentarian—Mrs. B. F. Turner, Memphis, Tennessee.

The meeting adjourned with everybody happily cheering and congratulating the new Tennessee Auxiliary.

During the afternoon, the guests enjoyed a sight seeing drive through the city followed by an elaborate tea at the Memphis Country Club.

The President's Ball (President of S. M. A.), Wednesday evening at the Hotel Peabody, a gala occasion, concluded the 1927 annual meeting of the Woman's Auxiliary to the Southern Medical Association. Next year, the conference will be the guests of Asheville, North Carolina.

THE FORUM

To the Editor:

On October 13, 1927, a man came to my office that gave his name as C. F. Wiser. He said he was representing the Gish Company of 412 W. Main St., Louisville. He was selling their Dialite lamp. He proposed trading me one of these lamps for an old lightning diathermy that I had. I traded with the understanding that the lamp would be shipped from Louisville. I waited for two weeks and then wrote the company at the above address. My letter was returned with "no such address" written on the envelope.

I wrote Mr. Theo. Tafel of Louisville. He advised me to write The Gish Co., at Central City. In reply to my letter Mr. C. W. Dodge, secretary of the company, informed me that C. F. Wiser had never been connected with their company and that he had pulled off several similar, swindling deals in the name of their company. He states that they have been looking for him for the past four months. Please inform the physicians of the state to be on the lookout.

L. R. HENRY, M. D.,
North Middletown, Ky.

To the Editor:

You will be interested to know that I have just received a letter from Clay County telling me that they are using the measles serum and getting fine results. A week ago Sunday I went up to Fogertown and got a pint of convalescent blood and put it down in a well in a bottle in a bucket. This was done to prove the practicability of the method of taking the serum from the first cases in the community and using it

for the later cases. Don't you think it would be well to put in the next Journal a brief statement of this and advise that it is done elsewhere when measles breaks out. I should be glad to go anywhere in this part of the country and draw off the first serum to show them how and some one from the State Board of Health could go out to other parts of the state. I had no difficulty in persuading the party to give me the blood and paid nothing for it.

R. H. Cowley, Berea.

BOOK REVIEWS

A SOUND ECONOMIC BASIS FOR SCHOOLS OF NURSING, and Other Addresses, by Mary Adelaide Nutting, R. N., M. A., Author of "A History of Nursing" in collaboration with Lavinia L. Dock, R. N. Principal of the School of Nursing and Superintendent of Nurses, The Johns Hopkins Hospital School of Nursing, Baltimore, 1894-1907; Professor of Nursing and Health, Teachers College, Columbia University, 1907-1927. G. P. Putman's Sons, Publishers, 2 W. 45th St., New York. Price \$2.50

In this collection of addresses she makes permanently available to all those having at heart the welfare of this great profession the wisdom drawn from her years of experience, and the opinions she has expressed at various times to representative bodies of hearers in regard to the problems arising in the growth and development of Schools of Nursing.

Miss Nutting's book should be of interest to all members of the nursing profession, as well as to those concerned in hospital administration.

CITY HEALTH ADMINISTRATION. By Carl E. McCombs, M. D., National Institute of Public Administration and New York Bureau of Municipal Research.

Part I.—Municipal Health Functions.

Part II.—The Organization and Administration of Sickness Preventive Functions.

Part III.—The Organization and Administration of Sickness Treatment Functions.

The MacMillan Company, Publishers, New York.

The author has drawn extensively upon the reports of surveys of municipal health work made by the New York Bureau of Municipal Research during the past fourteen years. This volume covers in detail every phase of public health administration and should be in the library of every health officer.

News Item.

Dr. H. B. Strull, physician, announces the removal of his office to 502 S. Sixth Street, S. W. corner Sixth and Walnut. Telephone City 7735. December 1, 1927.

THE PRACTICE OF MEDICINE. (Second Edition, Reset). The Practice of Medicine. By A. A. Stevens, M. D., Professor of Applied Therapeutics in the University of Pennsylvania. Second Edition, entirely reset. Octavo of 1174 pages. Philadelphia and London: W. B. Saunders Company, 1926. Cloth, \$7.50 net.

The second edition of this Tea Book on Internal Medicine is all and more than the first edition which met with such a cordial reception from the medical undergraduate and busy practitioner. In order to bring the work up to date many sections have been entirely rewritten and changes made in the text on practically every page. Nineteen new subjects are discussed, including Primary Meningococcic Bacteriemia, Tularemia, Lipodystrophy, Uveoparotid fever, Epstein's Nephrosis, Ayerba's disease, Homer's Syndrome, Dick Test, etc.

In clear concise style, each disease is well discussed from definition to treatment, while a fair Bibliography is given for most subjects.

This up to date edition of the Practice of Medicine should prove a very welcome volume.

HAY FEVER AND ASTHMA. (A practical handbook for hay-fever and asthma patients). By Ray M. Balyeat, A. M., M. D. F. A. Davis Co., Publishers, Philadelphia. Price \$2.00.

For the patient suffering from hay-fever or asthma, Dr. Balyeat's book is a valuable addition to the literature on these diseases. He tells in nontechnical language the routine management of these diseases and describes new methods for determination of their causes.

Considerable space has been given to the discussion of wind-borne pollinated plants which cause such a high percentage of hay-fever and asthma.

Animals, fowls and dust are all treated with reference to these two diseases while methods of testing patients and the preparation of materials for treatment are thoroughly discussed.

The book is the results of years of research and practice by the author and also reflects the knowledge of our best authorities on these diseases.

While the book is intended primarily for the patient the physician will be interested in the case records and will find the book useful as a reference manual.

A PRIMER FOR DIABETIC PATIENTS. (Third Edition, Reset.) A brief outline of the Treatment of Diabetes with Diet and Insulin, including Directions and Charts for the Use of Physicians in Planning Diet Prescrip-

tions. By Russell M. Wilder, M. D., Section on Nutrition, Division of Medicine, Mayo Clinic. Third Edition. Reset. 12Mo of 134 pages. Philadelphia and London: W. B. Saunders Company, 1927. Cloth, \$1.50 net.

MODERN PRACTICE OF PEDIATRICS. By William Palmer Lucas, M. D., LL.D., Professor of Pediatrics, University of California Medical School; Physician in Chief, Children's Department, University of California Hospital; Consulting Physician, Baby Hospital, Oakland, California; Visiting Physician, San Francisco Hospital for Children; Visiting Physician, San Francisco Hospital. The McMillan Company. New York, Publishers. Price \$8.50.

A book for the student of Pediatrics that has been awaited with the keenest anticipation by those who know Dr. Lucas. The work proves to be all that was hoped for as the author has carried out his intention of stressing preventive pediatrics throughout the entire volume, while nothing is omitted from the "orthodox" subjects usually treated in books on children's diseases.

The book is divided into two parts, the first dealing with infancy, the second with childhood. In part I are found the newer conceptions concerning nutrition with very much space devoted to the problem of maintaining positive health for the infant. Nutritional disturbances are also discussed in this part.

Part II deals with preventive pediatrics for the child and with different children's diseases, all set forth in the incomparable style of the author.

This is a most up-to-date work and will be welcomed by both the student and the pediatrician.

CLINICAL PEDIATRICS, by John Lovett Morse, M. D., Professor of Pediatrics, Emeritus, Harvard Medical School; Consulting Physician at the Children's, Infants' and Floating Hospitals, Boston. Philadelphia and London. W. B. Saunders Company, 1926. Cloth, \$9.00 net.

This work is a comprehensive study of the diseases of children with one section dealing with nutrition. Written in clear concise language each subject is thoroughly discussed from a clinical aspect. Essential points are stressed while what the author thinks unimportant is omitted.

Dr. Morse has written his personal impressions gained through clinical practice and while he states in the preface that the book was written primarily for his own amusement it will certainly be a great benefit to the general practitioner as well as the student.

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COUNTY SOCIETY REPORTS

Franklin: The Franklin County Medical Society met in the Writing Room of the Capital Hotel for their regular monthly session Thursday, September 1st at 12:00 noon.

The President, Dr. F. M. Travis, presided and the following members were present: Doctors Roemele, Ginn, Youmans, Jackson, C. T. Coleman and Minish.

We had as visitors from Campbellsburg, Henry County, Doctors Webb Suter, W. L. Voress and J. C. Hartman; from Hazelhurst, Mississippi, Dr. G. Sturm, and Louisville, Kentucky, Dr. M. Casper, who was the essayist. Dr. Casper read a most interesting and instructive paper on Pancreatitis, clearly demonstrating his ability to handle this subject which is a rather uncommon disease but one that all should be on the lookout for. A general discussion followed.

A business session followed at which time a letter from Mr. Donald McWain, of Louisville, Kentucky, written to Dr. John P. Stewart concerning a fee (in which no amount was specified) the Society owed him for publicity work he did before the State Meeting was held in Frankfort last year, was read. The following motion was duly made, seconded and carried:

"That in as much as the newspapers throughout the country have heretofore always shown a willing disposition to publish news items and pay reporters respectable salaries for the purpose of gaining such news; that whereas Col. Lindberg undoubtedly did not have to pay for the notoriety he obtained in the newspapers; and, in no state of the case when a stock brokerage concern goes to the wall do they have to pay for the notoriety obtained in the newspapers; this Society does not feel called upon to pay for any notoriety that the State Medical Association obtained; that we know it to be a fact that the Courier-Journal pays its reporters for the purpose of obtaining news, as do all other papers, we can see no reason whatsoever for paying Mr. Donald McWain any amount whatsoever for any writing that he may have done, feeling that if money is due him, it is surely due him from the papers for which he wrote the article complained of. The motion further states that the Society should pay Mr. McWain nothing; and, furthermore states that if he is not satisfied with the arrangement that the Society will then take the matter up with Mr. Brainard Blatt of the Courier-Journal, setting forth the facts in the case, turning all letters over to him in the possession of the Society, and let him arbitrate the matter, agreeing to abide by his decision."

The Secretary was instructed to send a copy of same to Mr. McWain.

Dr. C. T. Coleman is to have charge of the October meeting.

L. T. MINISH, Secretary.

Scott: Scott County Medical Society met at the Sulona Restaurant for six o'clock dinner with the following officers and members present: Dr. L. F. Heath, President; Dr. Faulconer of Lexington, Dr. Ammerson, Dr. Roberts, Dr. Allphin, Dr. Crutchfield, Dr. Johnson, Dr. Sanford.

Minutes of previous meeting read and approved. There being no old business, first on program we were addressed by Mr. Sugart of Cynthiana and Mr. Goldsborough of Georgetown, on a collecting system for the professional and business man. After discussion the President and Secretary were appointed as a committee to confer with these gentlemen on the system.

Next on the program was an excellent paper by Dr. H. H. Roberts, subject, "Focal Points of Infection, Producing Toxemia" This was a very enjoyable paper and instructive, was discussed by all members present.

This was a very enjoyable meeting with a delightful dinner at the Sulona Restaurant, after which the Society retired to the City Hall. The meeting closed until the first Thursday in November, when we expect to enjoy a paper on the Diagnosis and Treatment of Venereal Diseases, by Dr. William Sanford.

A. STEWART, Secretary.

McCracken: The McCracken County Medical Society closed with the May meeting until after the "hot season" is over, one of the most active and interesting periods of its existence.

At our January, 1927 meeting Mr. C. F. Southard of New York City, representing the "Eye Sight Conservation Council of America" was present by invitation and made an interesting and splendid address with illustrations, showing the bad effects of deficient eyesight in children and men and women, and defects of a system of lighting in schools, factories, public buildings, etc., a very large percent of which may be entirely prevented and corrected. It was a very excellent address showing the interest and enthusiasm of the speaker who has given five years of his time in the work, having spoken in twenty-five different states.

At our February meeting, Dr. J. F. Dunn of Arlington, Kentucky, President of the Southwest Kentucky Medical Association, was an invited guest and read the paper of the evening on "Eye Strain as a Cause of Headaches." Dr. Dunn is a good speaker. His paper will appear in the Journal.

Our March meeting was, no doubt, the most interesting meeting our society has ever enjoyed. It was "ladies night" and most of our members were present with their wives and a number of distinguished visitors as well as representatives of the daily press were present. Dr. and Mrs. A. T. McCormack and Dr. William Currie Martin of Louisville, and Mrs. V. A. Stilley of Benton, Ky., were present. Mrs. Stilley and Mrs. McCor-

mack represented the Woman's Auxiliary of the State Medical Society and organized McCracken County Medical Society Auxiliary. Both of them addressed our society, showing their interest and enthusiasm in their work and Dr. McCormack made a fine speech, as he always does, and Dr. Martin spoke of the health work in Louisville. Our society was strengthened and encouraged by these splendid addresses.

Through the influence of our Mayor, Dr. J. N. Bailey and the members of our society, Riverside Hospital, our city hospital, has been standardized and is now working under the rules governing Class A hospitals.

J. T. Reddick, Secretary.

Third District: The meeting was held with the Simpson County Medical Society at Franklin on June 29th at 10:30 a. m. with Dr. Hubert Merp, th in the chair. The meeting was held in the club room of the Southern Kentucky Sanatorium with thirty-three doctors present.

Reports of Clinical Cases: Dr. Willis London reported a case of trephining for pressure of bone on brain 20 years ago, with patient still alive. Dr. W. A. Guthrie reported a case of stone in the bladder with inclusion of a portion of the stone in the ureteral orifice. Dr. J. H. Blackburn reported two cases of tuberculosis of the spine in the aged; one of the lower dorsal region in a lady 65 years old and the other at the mid-dorsal region in a lady 64 years of age. Dr. J. L. Russell reported a case of retention of the urine, and Dr. G. H. Freeman a case of retention of feces.

A general discussion was opened on Retention of the Urine by Dr. H. L. Douglas, Nashville, and a further discussion by Doctors London, Fitch and G. Canby Robinson.

Dr. Lattie Graves, Scottsville, read a paper on "Dysmenorrhoea." This was discussed by Doctors Guthrie and Graves.

Dr. Henry L. Douglas, Nashville, read a paper on "Kidney Infections," which was discussed by Doctors Blackburn and Douglas.

A delightful dinner was served at the Hotel Franklin during which the members were entertained by vocal selections by Mrs. Douglas Harris and Miss Gibb. After luncheon the society returned to the club room for the remainder of the program.

Dr. T. H. Singleton, Bowling Green, read a paper on "The Commoner Causes of Loss of Vision," which was discussed by Doctors Moss, Meredith and Singleton.

Dr. G. Canby Robinson read a paper on "The Mechanism of Heart Failure," which was discussed by Doctors Donnelly, Hinton, Douglas, Jesse Russell, Graves, London, Guthrie and Robinson.

The meeting adjourned to meet with the Barren County Society the last of August.

John H. Blackburn, Secretary.



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